PAPER
TRADE JOURNAL
Title Reg. U. S. Pat. Off.

Vol. 117, No. 22 Thursday, November 25, 1943 Price Ten Cents

The Paper Industry at War and Afterward

By Frederic C. Clark

In an endeavor to get a comprehensive view of the pulp, paper and board industry as it is today, and some idea of what it may be in the next few years, a survey was recently made to view its war activities, the effect of the war on its operations, the place it has played in the war effort, and the conditions that undoubtedly will be met in the post-war period. Much of the material presented here is based on years of close contact with and study of the industry, amplified by answers to a questionnaire submitted to a group of prominent executives, engineers, technical directors and foresters. The author expresses his appreciation to those who have so kindly and so completely presented their views in answer to the questions asked. It was especially gratifying to secure an almost 100% response to the letters sent out.

In selecting the various groups, an effort was made to cover the country geographically and the industry from a standpoint of varied product. Every kind of pulp, paper and board was represented in the survey.

The physical condition of most pulp, paper and board mills prior to the war was good; in many cases it was excellent. Many mills seemed to have anticipated war conditions and to have carried out an extensive rehabilitation program. Many companies put back as much as was practicable into current maintenance, charging it to operations. The period of good business that preceded the beginning of the war on December 7, 1941, had made possible the purchase and installation of a considerable amount of equipment. All this enabled the industry to be of the greatest help in the national war effort when the time came.

FREDERIC C. CLARK

Frederic C. Clark, the author of this article, consulting engineer, 479 Moody street, Waltham, Mass., is widely experienced and favorably known in the pulp and paper industry. He is a charter member of the Technical Association of the Pulp and Paper Industry of which he was elected president in 1938 and served for two terms. He is a member also of the Canadian Pulp and Paper Association, Technical Section; the American Pulp and Paper Mill Superintendents Association; and the Papermakers Association of Great Britain and Ireland.

The paper industry promptly and effectively responded to the country's call to arms immediately after Pearl Harbor. The excellent physical condition of the mills, new equipment, previous good business, and large supplies of pulpwood and various wood pulps combined to put the entire industry in a position where it could begin to meet wartime needs almost over night. It was, therefore, able to handle the rush of orders without resorting to government subsidies for expansion.

No industry has done a better job in supplying war requirements at reasonable prices. This has been done in spite of government interference and incompetent directors without knowledge of the industry being placed in control.

During the First World War highly capable pulp and paper men were put in charge of the Pulp and Paper Division of the War Industries Board, and the best men of the entire industry were called in as advisers. The orders then issued were those best suited to meet the war effort. Contrast that condition with the chaotic state of affairs which existed at the beginning of the present war when directives were issued by unqualified men, sometimes against the advice of an entire industry and often against the most efficient and effective progress of the war. Fortunately, this condition has now been corrected by the utilization of qualified executives from the industry.

No industry has given more generously or more effectively of its time and effort than the paper industry. Through suitable committees set up by it and

(Continued on page 91)

Amplidynes in the Paper Industry

By H. W. Rogers Industrial Engineering Div., General Electric Co.

Research and development are the life blood of industry and perhaps no other industry has devoted more time, energy, and expense to this branch of engineering than the electrical industry. Continual search into the unknown and the development of new ideas have resulted in many benefits to industry and has helped solve innumerable problems heretofore extremely difficult or impossible to solve.

Out of this research has come the amplidyne. While it appears to be an innocent looking direct-current motor, the amplidyne is in reality two motors wrapped up in one package with windings so designed that it becomes a power amplifier with an enormous ratio and extremely quick response. It is, therefore, possible to detect minute variations in energy, step them up through the amplidyne, and use this device to hold constant voltage, constant speed, or constant current.

Usefulness Recognized in Paper Industry

The usefulness of the amplidyne has been recognized in the paper industry and many applications have already been made. One of the first applications was made on a single-motor paper machine drive whose poor speed regulation was causing much difficulty, especially at the lower speeds, since the user wanted a speed range of eleven to one, all by voltage control.

Both voltage and speed regulators had been used on this machine with meager results; and while a speed range as wide as eleven to one by voltage control had, up to this time, been rigidly avoided because of possible difficulty, nevertheless, an amplidyne speed regulator was applied with surprising success. A typical application of this type is shown in Fig. 1 and 2. Similar equipment was later installed in the same mill on two other single-motor paper machine drives.

Following these applications, another single-motor paper machine drive utilizing both the amplidyne and an electronic amplifier was applied. Here the amplidyne acted as a current regulator to hold constant current during acceleration, subsequently becoming a speed regulator to hold constant speed on the machine. In this case, the voltage of a pilot generator connected to the main motor was compared with the voltage of a grid glow tube in a bridge circuit and amplified through the electronic amplifier for the control field of the amplidyne. The amplidyne itself was used as an exciter in the generator field circuit.

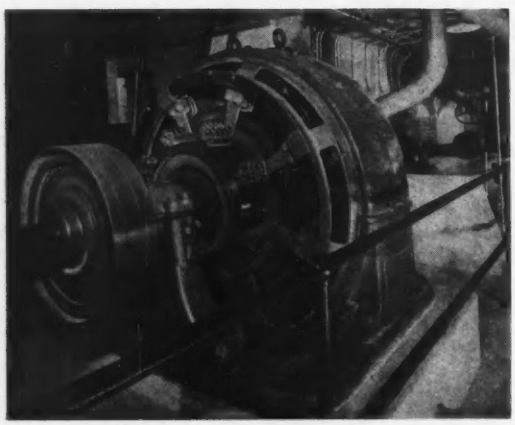


Fig. 1
Close-Up of Single-Motor Paper-Machine Drive; Amplidyne Was Applied to This Drive as Speed Regulator.

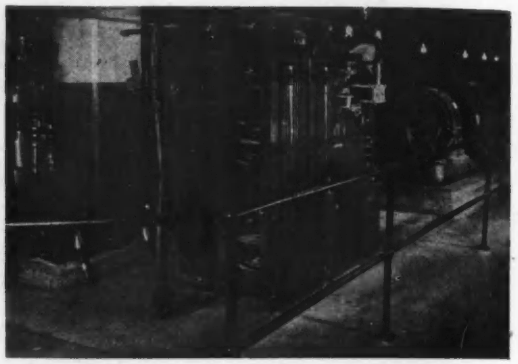


Fig. 2
Amplidyne Control Panel for Single-Motor, Paper-Machine Drive. Amplidyne Shown in Lower Left-Hand Corner. Motor-Generator Set for Drive Motor Shown in Right Background.

Application to Cylinder Paper Machine

Perhaps a more interesting application of the amplidyne is to those cylinder paper machines where a common felt is used on the wet end, connecting the cylinder molds, primary presses, wringer rolls, and suction drum roll with the first main press. In some of the older drives, attempts were made to partially drive the cylinder molds and primary presses mechanically, to ease off on the felt load; nevertheless, the felt had to be designed to transmit some power at the sacrifice of water removal qualities.

In the electric drive, motors are used to assist in driving the cylinder molds, primary presses, and suction drum roll (Fig. 3). I say assist because it is not advisable for the motors to assume the total friction load since the felt must be under some tension to properly carry the sheet, this tension being obtained by allowing the felt to carry some of the friction load. However, the felt is relieved of a large portion of the load and in consequence may be made somewhat lighter and more attention can be paid to its water removal qualities, resulting in longer felt life, higher speed, and increased production.

The helper motors on the wet end of a cylinder machine receive their power from a generator which may be driven from the first press shaft; in this case, the generator becomes a part of the load on the unit which drives the whole machine, or it may be part of a motor-generator set and augment the main driving unit. In either event, the whole wet end must be started as a single unit, and it is of the utmost importance that the helper motors carry their full share of the load from standstill to whatever speed is de-

sired. Otherwise, the felt will be subjected to undue strain. It is at this point that the amplidyne assumes importance because it may be used to hold a constant current in the motor armatures at standstill or at any operating speed, thereby assuring that the motors are always delivering the required torque and that the felt will not be subjected to undue strain.

Installations in Successful Operation

A number of these drives have been installed and are in successful operation. It might be well to add here that the auxiliary wet-end drive for cylinder paper machines is a helper drive for any cylinder machine, regardless of whether it is driven by a steam engine, steam turbine, single-motor drive, or sectional drive.

Akin to the auxiliary wet-end drive is the dual press drive and suction-drum-roll drive. The dual press, consisting of two highly polished rolls with a rubber covered roll in between, really performs the function of two standard presses but occupies less space. A separate felt for each press roll is generally used. Normally, one press roll is driven by a motor as is the case with a sectional drive, or from the back-line shaft if a single-motor drive is used, while the other one may be driven mechanically from the first roll.

If a mechanical connection is used between rolls not of the same diameter, slippage detrimental to the sheet will take place at the nip. Therefore, provision must be made whereby the rolls are permitted to operate at the same peripheral speed so that slippage takes place elsewhere. The usual friction device is not entirely satisfactory since it does not always slip under the same load and anything in the nature of a differential is expensive.

The most satisfactory way of driving this second roll is to provide some means to absorb its friction load, thus permitting it to be driven at the correct surface speed from the first roll through the nips.

Answers Another Problem

The electric motor has been the answer to this problem, and here again the amplidyne has been used to maintain constant current in the motor regardless of speed. This current, however, is adjustable and should be set to overcome the friction load only. The generator supplying power to this motor may be driven from the first roll shaft, the backline shaft, or it may be part of a motor-generator set.

The suction drum roll used so frequently with the

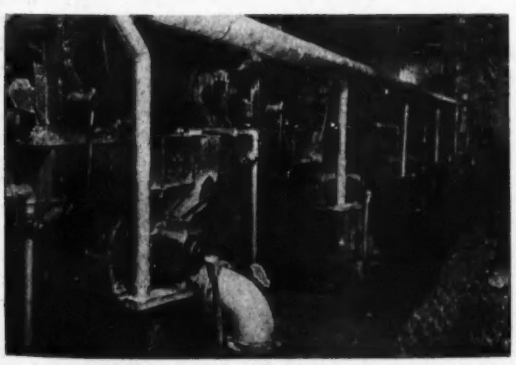


Fig. 3
Totally-Enclosed Gear Motors, Each Driving Cylinder Mold on Cylinder Machine.

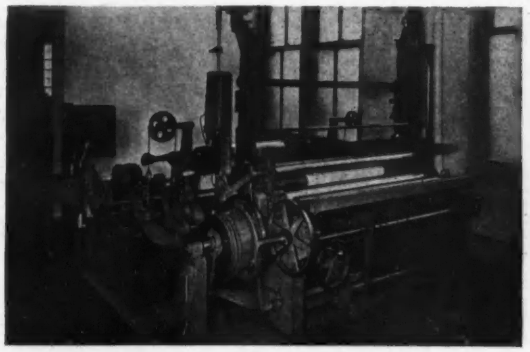


Fig. 4
Paper Winder and Slitter Equipped with G-E Side-Register Control Equipment. Amplidyne Generator Controlled by Photo-electric Amplifier Supplies Power to D-C Motor which Shifts Roll of Paper to Maintain Register. General View Showing Control Panel at Center Left, Amplidyne Set Near Floor below it, and Scanning Head below and beyond Counterweight in Center.

cylinder paper machine should be driven at the felt speed and should maintain constant torque or constant current regardless of machine speed. If it is one unit of an auxiliary wet-end drive, the motor driving it will, in all probability, be required to carry the friction load only and it will be controlled as one of a group of motors.

If it alone is electrified, it may actually have to pull the cylinder molds, in which case its load is somewhat more than the friction load. However, it must start and stop with the wet end section and exert a constant torque throughout its operation. Here again the amplidyne has been used as a means of holding constant current and of properly controlling the motor under all operating conditions.

There are many instances where it is highly desirable to hold constant tension in a sheet of paper, particularly in winding operations, such as the reel on a paper machine, for example. Constant tension is essential here, regardless of whether a constant-speed drum-type reel or a center wind reel is used.

Thus far the amplidyne has not been applied to drum-type reels; it has been applied to the center wind reel to maintain constant sheet tension as the roll builds up in diameter. This is accomplished by using an adjustable-speed direct-current motor with an amplidyne operating on the motor field to maintain constant armature current.

A Somewhat Different Problem

The paper rewinder is a somewhat different problem in that the winding roll from the paper machine becomes the unwinding roll on the rewinder, the sheet being led over idler rolls, under the slitters, around the winding drums, and onto a core where the finished roll is wound. In this case, a constant tension is essential to winding smooth rolls of even density.

A rewinder starts and stops frequently. Since it must handle the entire production of a continuously running paper machine, it generally operates at about twice the speed of the paper machine. Many of these machines are equipped with the Ward-Leonard system of control, as smooth acceleration and deceleration are essential to avoid breaking the sheet.

To hold constant sheet tension, a direct-current generator is installed on the unwinding stand. This generator is very much like an adjustable-speed motor, having sufficient field control to take care of

the variation in diameter between the core and the full-size roll. The generator is in parallel with the generator which furnishes power to the main winder motor, and the power it generates by holding tension in the sheet is used to help drive the winder. In other words, the main generator of the Ward-Leonard system furnishes only that power required to overcome the friction load plus whatever is needed to accelerate the winder from rest. When slowing down or stopping, regenerative braking is inherent in this type of drive.

Side-Register Control Equipment

Many amplidyne units have been used in conjunction with side-register control equipment on paper winders (Fig. 4) and with cut-off control equipment (Fig. 5 and 6) on bag machines. In both cases, the signal is obtained from a photoelectric tube, amplified through vacuum tubes, and applied to the field of the amplidyne, which, in this case, serves as a generator and furnishes power to the corrective motor.

In the first case, the equipment is maintaining the side register on a sheet of paper by scanning the edge of the sheet. In the second case, it is maintaining accurate cut-off on bag machines by scanning register marks printed on the web.

The Supercalender

The supercalender, a finishing machine consisting of a stack of alternate highly polished steel rolls and either paper-covered or cloth-covered rolls under heavy pressure, has long been an admirable application for the direct-current Ward-Leonard system of control. The supercalender is frequently used in conjunction with a winder where the same generator supplies power to both the winder and the calender motor. The normal arrangement for drives of this type is a weighted roll between the unwinding roll and the calender. The movement of the weighted roll controls the brake on the unwinding roll and therefore the tension in the sheet at this point. Another weighted roll between the calender and the winder controls the speed of the winder and thereby the tension at that point.

When this equipment is started up, it is first operated at low or threading speed. A narrow strip of paper (tail) is led through the calender stack from the unwinding roll, thence over the weighted tension roll and into the winder. Thereafter, the tail is widened out to the full width of the sheet and the equipment brought to full speed.

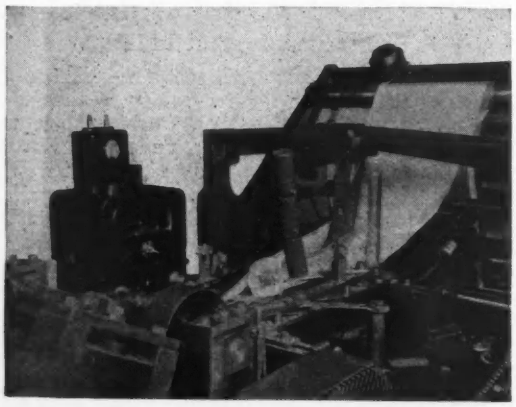


Fig. 5
G-E Amplidyne Web Register Control Applied to Paper-Bag Making Machine. View Showing Photoelectric Selector Switch, Voltage Indicator, and Web Scanning Head. Amplidyne Shown in Fig. 6.

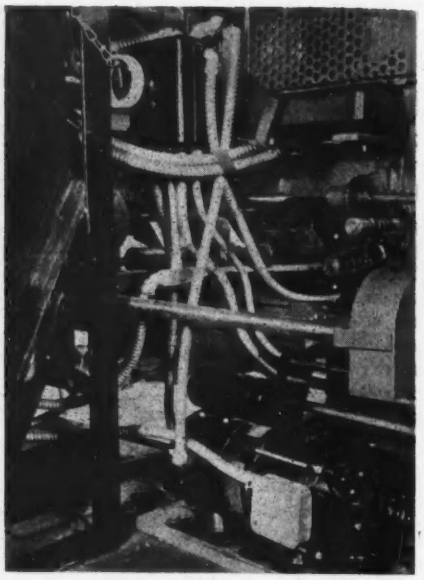


Fig. 6
G-E Amplidyne Web Register Control Applied to Paper-Bag Making Machine. View Showing 500-Watt, 1725-RPM Amplidyne Set.

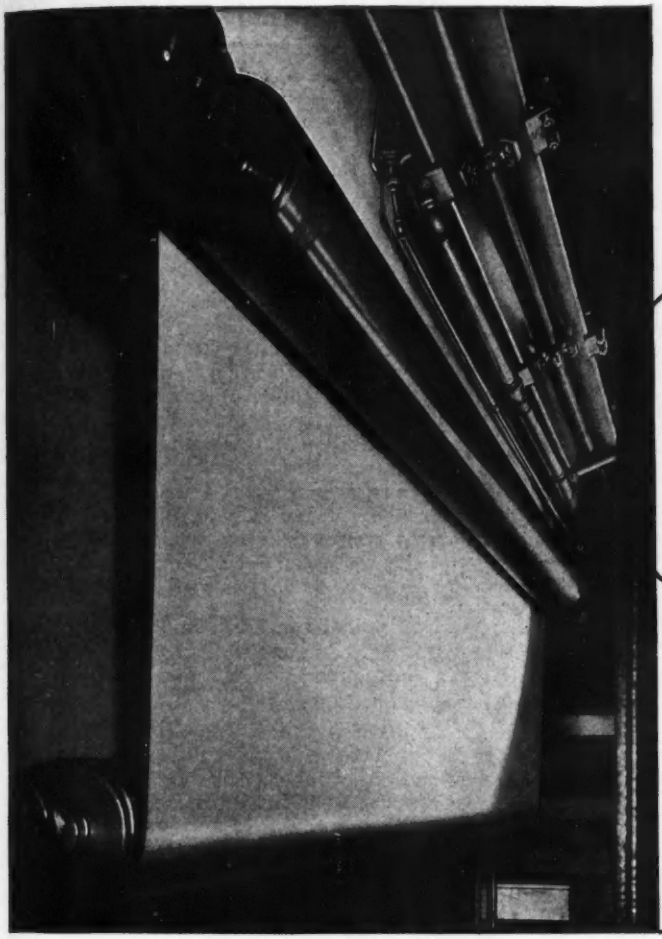
While the full-width sheet is strong enough to operate the tension roll, the tail that is led through on starting is not strong enough and cannot, therefore, control the speed of the winder. The result is sheet breakage. To overcome this difficulty, an amplidyne has been used to take over the function of the tension roll, holding correct speed on the winder during the threading operation only.

Application Is Almost Unlimited

Possibilities for the application of the amplidyne are almost unlimited. As time goes on, there will undoubtedly be numerous other applications in the paper industry.

Paul Hodges Dead

Paul Hodges, Production Manager, Crossett Paper Mills, Crossett, Ark. died suddenly on November 19th at Cincinnati, Ohio from heart trouble. Mr. Hodges was born in Florence, Ala. on February 23, 1906 and graduated as a chemical engineer from the University of Alabama in 1928, following which he was an assistant instructor at the University. He was chief chemist for the Gulf States Paper Corp. at Tuscaloosa, Ala. for seven years, following which he was plant control engineer for the Scott Paper Company, Chester, technical director for the Brunswick Pulp and Paper Company, Brunswick, Ga. until he went to Crossett to his recent position. He had many friends in the industry and was active in the Technical Association of the Pulp and Paper Industry wherein he was at the time of his death a member of the Executive Committee and Chairman of the Alkaline Pulping Committee. His funeral was at Johns Funeral Home, Birmingham, Ala. on Tuesday, November 23. He is survived by his wife Lillian Fitzgerald and sons Paul Jr. and William Fitzgerald.



Supposing you had to shut down the machine every little while so that a couple of hands could go through the laborious and time-consuming job of washing and roping your press felts to get them unclogged enough to run again. What a headache that would be, today!

Your VICKERY FELT CONDITIONERS

save you all that labor and lost production. Be sure, therefore, that they're kept on the job and in shape to do their best work. Get in touch with us if there's any question of Conditioner operation or maintenance.

BIRD MACHINE COMPANY
SOUTH WALPOLE • MASSACHUSETTS

Wood Conservation by Hydraulic Log Barking and Whole Log Chipping

By R. J. LeRoux, Mgr. Everett Mill, Pulp Div., Weyerhaeuser Timber Co.

The following paper on "Wood Conservation in a West Coast Pulp Mill by Hydraulic Log Barking and Whole Log Chipping" was presented Thursday evening, November 18 by R. J. LeRoux, manager, Everett Mill, Pulp Division, Weyerhaeuser Timber Company, at the meeting of the Michigan Division of the American Pulp and Paper Mill Superintendents Association:

The Weyerhaeuser policy of forest management is based upon protecting the productivity of our forests and assuring indefinitely the future raw material source of our own wood using industries.

The old order of "cut out and move on" no longer fits in with the present day conception of what constitutes good forest management. It was inevitable that the pioneer lumberman cut without much thought of the future. This because the Northwest was being rapidly developed and the forest industry was a part of the great Westward movement of American people and capital. Today, commercial forestry is known as "tree farming" and owners are thinking of this great natural resource less and less as so many thousands of feet and more and more as so many acres of land. The tree farms are an important practical step toward sustained yield in lumber and pulp production—the ideal of stable forest management.

The forestry program of the Weyerhaeuser Timber Company, typical of that of other companies, is dedicated to maintaining a continuous supply of forest materials for the future. Fire, the arch enemy of our forests is being combatted by comprehensive fire control plans. The hazard of forest fire is being held down by snag falling, trail building and careful slash burning currently with the logging operation. In addition, fire patrols and fire fighting equipment, privately financed, are being systematically provided and improved. To insure future forest growth on cutover lands it is our policy to leave sufficient trees of seed-bearing size so natural re-seeding may take place. Consciencious effort is being made to preserve and protect immature and second-growth timber. Also an integral part of the Weyerhaeuser forestry policy is thorough and continuous research to increase the utilization of this most valuable natural resource.

Era of Wood Research Just Begun

The chemistry of wood cellulose and lignin has opened up new opportunities for timber utilization. We believe the era of wood research and product development has just begun for the Pacific Northwest region. This means that the "tree farmer" today may anticipate a degree of forest utilization and industrial processing which will drastically reduce the burden of commercially unusable forest material with which the industry has struggled in years past. The pulp mills of the West Coast have contributed greatly to solving the problem of forest waste by their utilization of wood species which heretofore were not processed into finished products. This was due to the mixed specie in our forest stands, all of which had to be harvested regardless of specie in order that the trees suitable for conversion into lumber and other wood products might be obtained.

The pulp industry has expanded rapidly in recent years due to the increased uses found for paper and paper products. This expansion required that increasingly greater quantities of trees be cut from our forests for conversion into wood pulp. With the future of the industry being dependent upon how long our forests would last, pulp manufacturers became acutely aware of the wood waste inherent in wood preparation for the sulphite pulping process. They began to realize that conservation of the industry's wood supply could be effected within the pulp mills themselves as well as in the forests.

Equipment for 275 Ton Mill

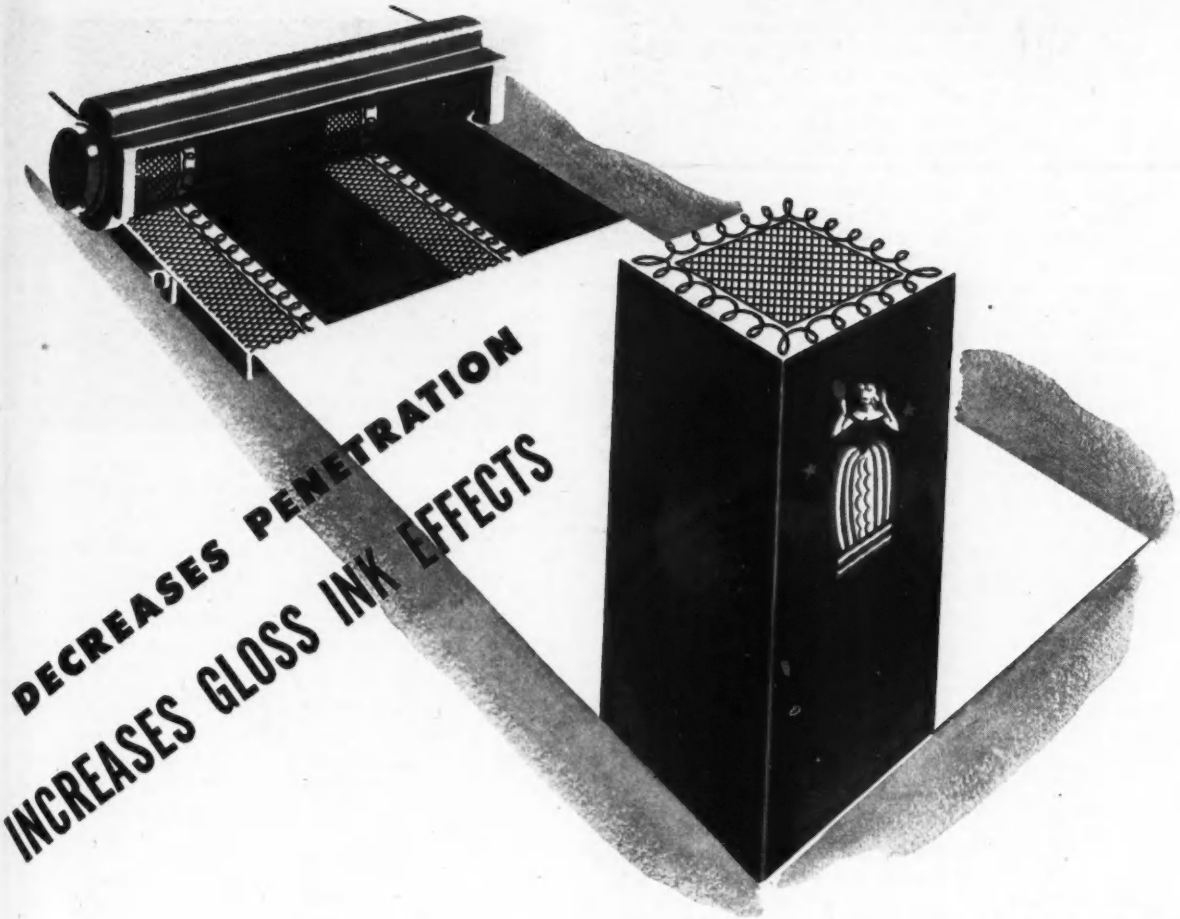
In a sulphite pulp mill of approximately 275 tons per day capacity the following equipment is generally required to reduce 275,000 feet of pulp wood logs to chip stock in an eight hour wood breakdown operation: two ten foot double cut band saws, two head rigs, one edger for each sawing side, a series of trimmer saws, four hand barkers, two gruber barkers for slabs, four power barkers for barking cants, a series of knot borers for removing knots, sufficient chip screening capacity for chip grading and three eighty-four inch chippers, besides a great deal of conveying equipment to handle cants and chips.

In breaking down a log into cants of approximately five inch thickness, ten feet in length and five to fifteen inches in width, with the above equipment, the wood loss due to slabbing the log, sawing it up into cants and knife barking it, is approximately thirty per cent. This method of wood breakdown with its resultant high wood loss is typical of the wood preparation departments of sulphite pulp mills today.

The removal of bark from logs by means of water had been discussed by engineers of the Weyerhaeuser Timber Company since 1933, and experimental work was started in 1935 at the Longview Mill. Between the years of 1935 and 1941, many individuals of the Weyerhaeuser organization contributed to the solution of the multitude of problems encountered in the development of a hydraulic log barker and whole log chipper. By the Spring of 1941, the results of the experimental work justified proceeding with a full scale installation at Everett. In June of that year work was started.

War Holds Up Construction

It was estimated that construction of the barker could be accomplished by June of 1942; however, with the entrance of our country into the war it was realized that the plant could not be completed on schedule. The conversion of our country to a war



METHOCEL
- Promotes Uniform Ink Receptivity
- Extends Ink Supplies
- Provides Grease Proofing for Paper

METHOCEL, the economical sizing material, permits outstanding gloss ink effects with regard to brightness and gloss of printing. It also aids in achieving an unusual degree of uniformity of ink receptivity—thus extending ink supplies through decreased penetration into the stock.

METHOCEL also effects valuable conservation of materials used in other paper and packaging operations. It reduces paraffin requirements and, being completely impervious to greases, fats, waxes and oils, does the work that often requires the use of one or more additional materials. These unusual qualities, plus exceptional film-forming properties, make METHOCEL a valuable and important "tool" to the paper industry.

THE DOW CHEMICAL COMPANY
MIDLAND, MICHIGAN

New York · St. Louis · Chicago · Houston
San Francisco · Los Angeles · Seattle

METHOCEL

THE UNIFORM SIZING MATERIAL

DOW

CHEMICALS INDISPENSABLE
TO INDUSTRY AND VICTORY

time economy prevented our obtaining necessary materials and the decrease in the labor supply seriously affected our ability to carry on with the construction of this unit. However, despite the many obstacles with which our engineers were confronted, the barker was completed and placed into operation in October of 1942. During the next four months the logs were barked hydraulically and returned to the old wood breakdown plant for reduction to chips pending completion of the whole log chipper. The whole log chipper was completed on February 1, 1943 and since that time the entire plant has been in continuous operation.

The experimental work on the removal of bark hydraulically showed that the action of the water during the barking operation was more one of erosion than of chiseling. Due to the fact that the difficult portion of the bark to remove was the cambium layer next to the log, it was found that a jet of water which would operate at ninety degrees to the surface of the log was essential. It was also found that even though it was possible to remove bark at pressure starting at about 400 pounds that the rate of removal increased with the rise in pressure. Also the higher the pressure the farther away from the log the nozzle could be mounted.

The fact that the action of removing the bark was one of erosion rather than "chiseling" allowed design to proceed along two methods: (1) turning the logs so that the jet would travel circumferentially around the log and (2) having the jet travel the length of the log. The latter method was adopted.

While it was necessary to determine the most advantageous pressures and means of distribution, the main problem lay in the handling of the logs, for in order to realize maximum savings in wood and manpower it would be necessary to have equipment capable of handling logs of all sizes and types. The problem would have been quite simple if all logs were straight and round, however, this is not the case.

Equipment Finally Designed

The equipment finally designed and installed consists mainly of a machine in which the bark is removed from the log by water pressure, a chipper large enough to chip logs up to forty inches in diameter, and a band mill to reduce logs over forty inches in diameter into sections which can be accomodated by the chipper.

FIG. 1
108-inch Swing Cut Off Saw for Cutting Logs into 20-foot Lengths.

FIG. 2
Log in Position Ready for Barking. Arms and Index Chain Hold Log against Kness.

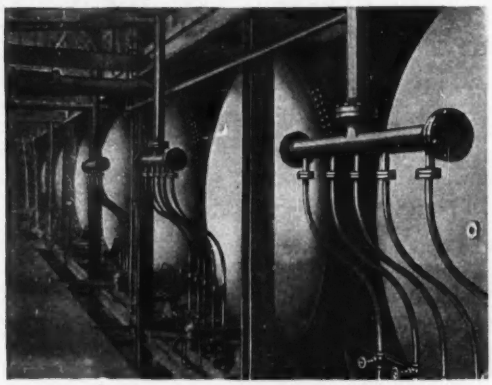
A log haul of conventional design is used to bring the logs from the pond into the barking plant. At the head of the log haul the logs are cut into approximately twenty foot lengths by a 108 inch swing cut off saw and then conveyed to the barker proper. One log at a time is placed in the barker which is capable of handling logs nine inches to seventy-two inches in diameter and twelve feet to twenty-six feet in length.

The logs are held on steel knees set at an angle of 20 degrees from the horizontal. These knees serve to hold the logs in place during the barking operation and can be set at predetermined positions depending upon the diameter of the log to be barked.

Over the knees are mounted structural steel arms which perform the important function of holding the log against the water jet and which, by means of an indexing or turning chain, rotate the logs in even increments in order to continuously present a fresh bark surface for removal.

Actual barking is performed through two traveling nozzles delivering 750 G.P.M. of water with sprays overlapping, which are mounted on a carriage run on tracks underneath and parallel to the log. The width of the nozzles' cut is about ten inches and the pressure of water is 1400 pounds per square inch. The carriage for the nozzles is set under the log in order that the two nozzles will be parallel to the bark surface under all conditions of log taper.

The speed with which the nozzles' carriage moves back and forth can be governed within rather wide ranges. It may be changed to accommodate tight clinging bark or bark of different thicknesses. In operation, the nozzles make one pass the length of the log and the log is turned a previously selected distance up to twelve inches. The nozzles make a return pass and the log is again turned. When a log has been completely barked, it is unloaded from the knees by a cylinder-operated unloader operated from the high pressure water supplied to the barker. Water at 1400 pounds pressure is supplied by a multi-stage pump driven by a 3600 rpm motor of 1000 hp. An arrangement of rubber hoses carries the water from the pump to the nozzles. The nozzle carriage is driven back and forth the length of the log by a steam engine. Design features essential to meet the requirements of quick reverse and rapid acceleration make this engine unique. Considerable investigation of electrical drives



Nine 14' x 40' Horizontal Digesters

Biggs Digesters

Since 1887 BIGGS have been serving the Paper Industry throughout the world.

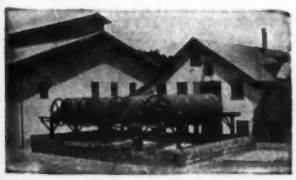
BIGGS Globe, Cylinder and Stationary Digesters are furnished in all sizes and are complete with various types of drives, linings, etc., to meet operating conditions encountered.

The established record of BIGGS all-welded Digesters and pressure vessels —a record of 100% performance—is conclusive evidence of BIGGS continued leadership in the Paper Industry.

BUILT BY BIGGS

Globe Rotary Bleaching Boilers; Sulphate and Sulphite Digesters; Cylinder Rotary Boilers; Penstocks; Electric Welded Steel and Iron Pipe for Water and Mill Supply; Welded High Pressure Vessels; Special Steel and Alloy Plate Work for the Paper Industry.

Competent Erecting Organization



Biggs Standard 8' x 24' Cylinder Rotary Bleaching Boilers

14 ft. Diameter Rotary Digesters

THE BIGGS BOILER WORKS CO. AKRON, 5 OHIO, U. S. A.

was made but the steam engine was found to be most flexible and best suited to the requirements of the job.

Apparatus Enclosed in Water-Tight Housing

The whole apparatus is enclosed in a housing with water-tight doors which permit the entrance and discharge of the log before and after the barking operation. The bark removed drops to a conveyor from which it passes over a screen on which surplus water is removed before the bark is hogged for fuel. Operation of the barker is controlled from a station adjacent to the barking machine. Here the operator can view the barking operation through a five-ply plate glass window, and here the levers and buttons are located which control the various pieces of equipment.

When the operator has finished barking a log, he stops the nozzle carriage engine. Through the electrical controls at the operator's station, motors are energized which open the entry and exit doors, lift the turning chain free of the log, and set in motion the chains entering and leaving the barker. The operator then unloads the log from the barker, after which the unloader drops back down into place. At the same time another log is also being loaded into the barker. The entry and exit doors close, the turning chains drop into position on the log, and the entry and exit chains stop. The operator then starts the nozzle carriage drive engine and the process of barking begins once again.

Chain conveyors are used to transport all logs less than forty inches in diameter to the roll case directly preceding the chipper. Those logs more than forty inches in diameter are by-passed through a band mill in which they are reduced in size sufficiently to enter the chipper spout.

The chipper is of standard design, having a disc of 171 inches in diameter and 9¾ inches thick. Including a 1,000 horsepower wound rotor motor the revolving parts of the chipper weigh in excess of 45 tons. A loading device is used to lower the logs into position for chipping. Four knives each fifty inches long are used on the chipper which is powered with a specially designed wound rotor motor of 240 rpm.

The chips are conveyed away from the chipper by a chain conveyor and dropped onto a belt conveyor five feet wide and operating at a speed of 450 feet per minute.

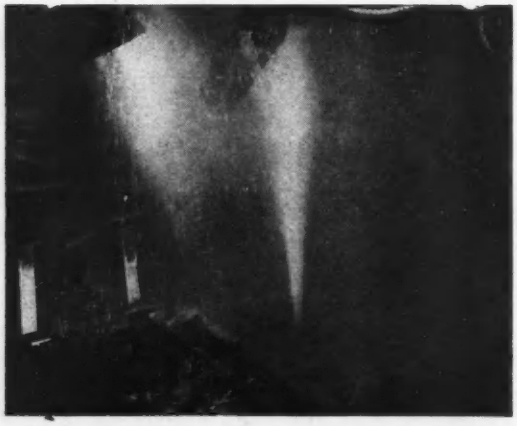


FIG. 3
Water Flow from Nozzles. 750 G.P.M. at 1400-lb. Per Square Inch Pressure.

FIG. 4
Log Being Chipped.

Twenty Foot Log Barked in Thirty Seconds

A log of forty inch diameter and twenty feet long can be barked in less than thirty seconds and after reaching the chipper can be reduced to chips of standard size in about the same time. Operating eight hours per day, this unit can produce sufficient chips for the manufacture of 275 tons of sulphite pulp daily.

It should be mentioned that the installation of the barker and big chipper was the first and second steps respectively of a three point program which, besides the reduction of wood waste, included improvement in pulp quality and increased efficiency of mill operation. The third step in this program, although the first in operation, was the building of the chemical cleaning plant at Everett for the removal by chlorine treatment of the black knot and bark seam dirt from the wood which cannot be entirely and satisfactorily removed during wood preparation if waste is to be avoided. The chemical cleaning plant went into operation in April of 1941. It was essential for operating reasons that this unit be put in operation before the barker and big chipper.

The barking and chipping unit has now been in operation long enough so that actual savings can be evaluated.

Immediate Saving in Manpower

The immediate saving to be effected was of course in manpower. The Everett mill originally had 121 men engaged in wood preparation. When the chemical cleaning plant went into operation it was no longer necessary to operate the battery of 24 knot borers in the chip plant so the crew was reduced to 97 men. A further reduction of 77 men was made when the barker and big chipper were placed in operation, as only 20 men are required to operate this new unit. The latter reduction could not have transpired at a more opportune time as men were made available for use in other vital war industries at a time when the manpower shortage was critical on the Pacific coast.

Prior to the inauguration of the hydraulic barking process of wood preparation, (and "chemical" cleaning plant) the Everett Mill used 1,032 feet of logs per A.D. ton of sulphite pulp. The experience to

Power and Production Problems *solved with Air!*

Paper making of tomorrow will utilize every modern method for increasing production, improving quality and reducing costs. For more than twenty years, Ross engineers have steadily advanced the standards in each of these major objectives — paved the way for successful commercial production of new paper products. With their unique background of experience and knowledge in this field, they are keeping apace of the further advances that new developments will make possible. Include recommendations by Ross in your plans for Paper Making of Tomorrow.

Ross engineers can give you valuable advice on how to lengthen the life and maintain the maximum efficiency of your present equipment. Call them in.

J.O.ROSS ENGINEERING CORP.

350 MADISON AVE., New York, N. Y.

CHICAGO • DETROIT • MONTREAL

date with the new installations averages 790 feet of logs per A.D. ton of pulp. This saving might better be reflected by making a comparison between the two methods on a yearly wood usage basis.

On the basis of 1,032 feet of logs per A.D. ton of pulp, the production of 96,000 tons per year requires 99,072,000 feet of logs.

On the basis of our present experience of 790 feet per ton of pulp, the same tonnage of pulp can be produced from 75,840,000 feet of logs.

Important Annual Saving

This represents an annual wood saving of approximately 23 per cent or 20,160,000 feet of logs. The original 30 per cent wood and bark loss has now been reduced to between 7 and 8 per cent. The waste now represents only the bark which is removed during the barking process.

The 23 per cent saving made in the Weyerhaeuser Everett Mill which produces pulp for the market would not be realized in the average mill on the Pacific Coast; the reason being that this mill was concentrating on cleanliness and, therefore, was breaking down the log so as to better remove dirt producing materials such as knots and inner bark seams.

Under normal conditions, when chlorine is once more available, the shrinkage due to "chemical" cleaning would reduce the pulp yield approximately 3 per cent. Further, the knot boring losses and extra saw kerf would operate to reduce the savings to be made by the average mill to approximately 17 per cent over all. Obviously the same would be true of any mill producing bleached sulphite which, in effect, has always "chemically" cleaned its pulp.

The wood saving effected in this one mill if multiplied by the number of other mills on the West Coast would represent a very great contribution by the pulp industry to protecting the future of its wood supply.

Consider a saving of 17 per cent and assuming the yearly production of bleached and unbleached sulphite only, in the states of Washington and Oregon to be 1,175,000 tons, the wood required to produce this amount of pulp would be approximately 1,116,250,000 feet, figured on 950 feet per A.D. ton. On the basis of 790 feet per A.D. ton, only 928,250,000 feet would be required or a saving of 188,000,000 feet annually.

Opens New Era of Wood Preparation

Wood conservation by hydraulic log barking and whole log chipping brings a new era of wood preparation to the West Coast pulp industry, and a significant advance in wood utilization. It is an indication of what private enterprise can do to solve its problems and continue its forward advance in one of our nation's foremost industries.

Paper Industry a Vital Aid in the War

By Stillman Taylor, Associate Editor, Paper Trade Journal

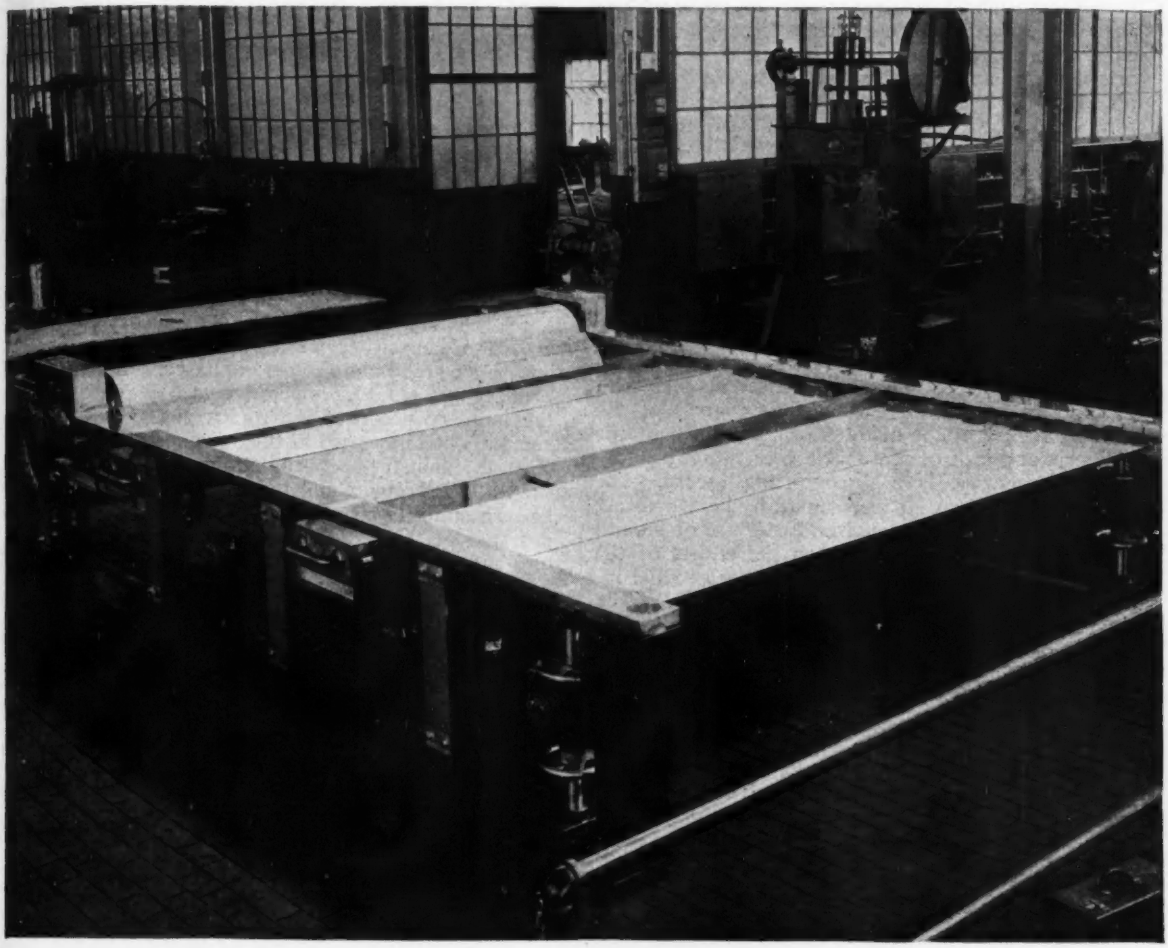
American industry has established a remarkable record in providing the great variety of goods and materials essential to win the victory in the titanic conflict of today. The contribution of the paper industry is notable in the many types of paper and paper products purchased by the government for all its essential purposes. Any shortage of paper that has been experienced and any that may occur is entirely due to government restrictions and cannot be attributed to any lack of ability or capacity of the American paper industry to produce all the paper the country needs. Shortages in various vital products always occur and reoccur in a wartime economy. Naturally, the more efficient the administrative agencies directing the abnormal economy are, the less disturbance will their activities have upon the living standard of the nation. At best, a wartime economy is a difficult period for all, because it exacts many hardships and sacrifices. A consideration of what a heavy burden our fighting forces must bear, should be sufficient to inform the home front that it is living a comparatively comfortable life.

Manpower a Prime Factor

The principal cause of a serious decline in an adequate supply of paper this year and a more sharply limited supply estimated for 1944, is primarily due to the displacement of labor—the withdrawal of manpower from productive work to meet the requirements of the armed forces. This condition must necessarily apply to all industries. In the conversion of the productive capacity of the nation to meet the heavy demands of war, serious errors in estimating both military and civilian needs must be accepted as almost inseparable from the enormous task of building a great fighting force. The highly developed and complex industrial resources of the United States are exteremly difficult to effectively regulate by government; but the capacity of the nation is so great that remarkable results are being achieved every day, despite very serious mistakes in the planning and in the administration of the war effort on the production front.

Manpower is such a fundamental need that no substitute can be found for the indispensable contribution of any skilled workman, although methods have been ingeniously applied to maintain operations in many paper mills with fewer employees. Fortunately, most of the essential types of paper and paper board are produced by mass production methods and machines and equipment are of relatively greater importance than workers. But no machine has been devised to enter standing timber, select the trees and fell them and automatically deliver pulpwood to the mills for conversion into wood pulp for processing into paper. Power operated saws, lifts and trucks are great aids in handling wood, but manpower to cut pulpwood is the bottleneck in the paper industry.

The lack of manpower to cut pulpwood, like the labor situation in many agricultural communities, is due to lack of essential balance between the fighting front and the home front. The commitments of the United States are so large that great strains and dislocations on the home front are inevitable and must progressively increase as the war continues. Considering the magnitude of the task, remarkable results



"It's Stainless for Us when the war's over"

"This is why we're *planning now* to install new stainless equipment when peace comes. Experience has shown that we can produce better, cleaner stock at lower cost. We get brighter, profit-making papers with modern Fourdriniers and other equipment made of this smooth rustless metal.

"Stainless steel is easy to keep clean and free from slime, dirt, rust and scale. It *stays smooth.* We have had little or no paper damage from slime, there has been less spotting by dirt and rust, less breakage and re-winds. Paper stock doesn't go down the sewer in cleaning as it used to. Replacements of equipment are fewer and we are able to maintain steadier production and employment.

You too may well "put your stock in ARMCO Stainless" when our fighting men and fighting metals come home from war. Is there any advance information we can give you? The American Rolling Mill Company, 3021 Curtis St., Middletown, Ohio.

STAINLESS ★ ARMCO ★ STEEL

THE AMERICAN ROLLING MILL COMPANY

have been attained. Unfortunately, this lack of balance in the wartime economy cannot easily be adjusted. A large supply of manpower must be kept in the armed forces and a large supply of workers must be retained on the home front to maintain the fighting forces and lend-lease. A compromise must, therefore, be effected.

A serious initial mistake was made by the lack of proper discrimination in classifying manpower for selective service. Too many experienced men were withdrawn from important industries and from the farms. This mistake is only now being partially corrected under the mounting pressure for an increased production and improved distribution of food for the home front. From the start of the mobilzation of the United States, the paper industry has persistently sought to cooperate in every practical manner with government officials to further the progress of the war. A review of the many efforts put forth by the industry, and lack of reasonable recognition by government agencies, is a disconcerting record. The essential character of paper should be known to all, because almost every person finds the use of several types of paper essential. But all the efforts of the industry to have paper recognized as an essential industry failed. The present uncertain paper supply situation in 1944 must, therefore, be attributed to the lack of foresight, first by the War production Board and later by the War Manpower Commission. Only at a very late date, when a shortage in paper became alarming, has the cutting of pulpwood been declared essential by the War Manpower Commission.

The paper industry in common with all industries not producing guns and bullets, has accomplished much by keeping its equipment in good operating order. Within the industry the remark has been quite frequently heard that, "We don't know how the old machine can keep on running but it is still turning out the goods."

Saving Labor in the Mills

Good maintenance and ingenuity practically applied has alone made it possible for paper mills to overcome the handicap of lack of new equipment and parts to replace that which has become worn and would normally be entirely rebuilt or junked. In one mill, gravity and power conveyors and stackers were installed for handling pulp on the dryers. This work, normally requiring 24 men is now being done with fifteen workers.

In the towel department of another mill, formerly operating three shifts a day, five days a week, a production plan was devised to increase efficiency under government production restrictions. The department is now operating two shifts a day, six days a week. Formerly 30 men were required. Under the new system, which was installed without cost, 18 men are doing the work.

Another mill reported it has placed 180 women on men's jobs in a mill payroll of 716 people. This saved 25% in manpower and the women are doing the work as well as the men did it. The ratio of women hours to that of men was 1.07.

Government Purchasing Declining

Direct government purchases of all kinds of paper and paper board in 1942 amounted to about 30% of the over-all production. Direct purchases aggregated between 1 and 1¼ million tons, while indirect purchases, such as paper and paper board used in defense plants, by contracts and sub-contractors in packaging and shipping various products for the armed forces, lend-lease, etc., is estimated at from 3 to 3¼ million tons. Of the fine paper production in 1943, war-end use has taken about 43%, and 25% in indirect purchases. About 23% of the output of sulphite writing, bond and miscellaneous fine papers has been on direct government order. All this represents war end-use. Current reports indicate the government is continuing to decrease its purchase of many types of paper, with the exception of map paper, which continues to increase.

Paper Consumption High

In 1899, the United States paper industry operated at 78% of capacity, produced 2,167,593 tons of paper and paper board and the per capita consumption was 57.9 pounds. In 1923, operating at 81% of capacity the industry produced 7,870,756 tons and the consumption had increased to 164.8 pounds per capita. In 1933, the industry operating at a ratio of 67%, produced 9,190,017 tons, and the consumption per capita had risen to 173.6 pounds. In 1941, the industry operated at 97% of capacity, produced 17,272,914 tons and the consumption per capita had increased to 299.4 pounds. This record year has yet to be surpassed and current consumption is running about 276 pounds per capita.

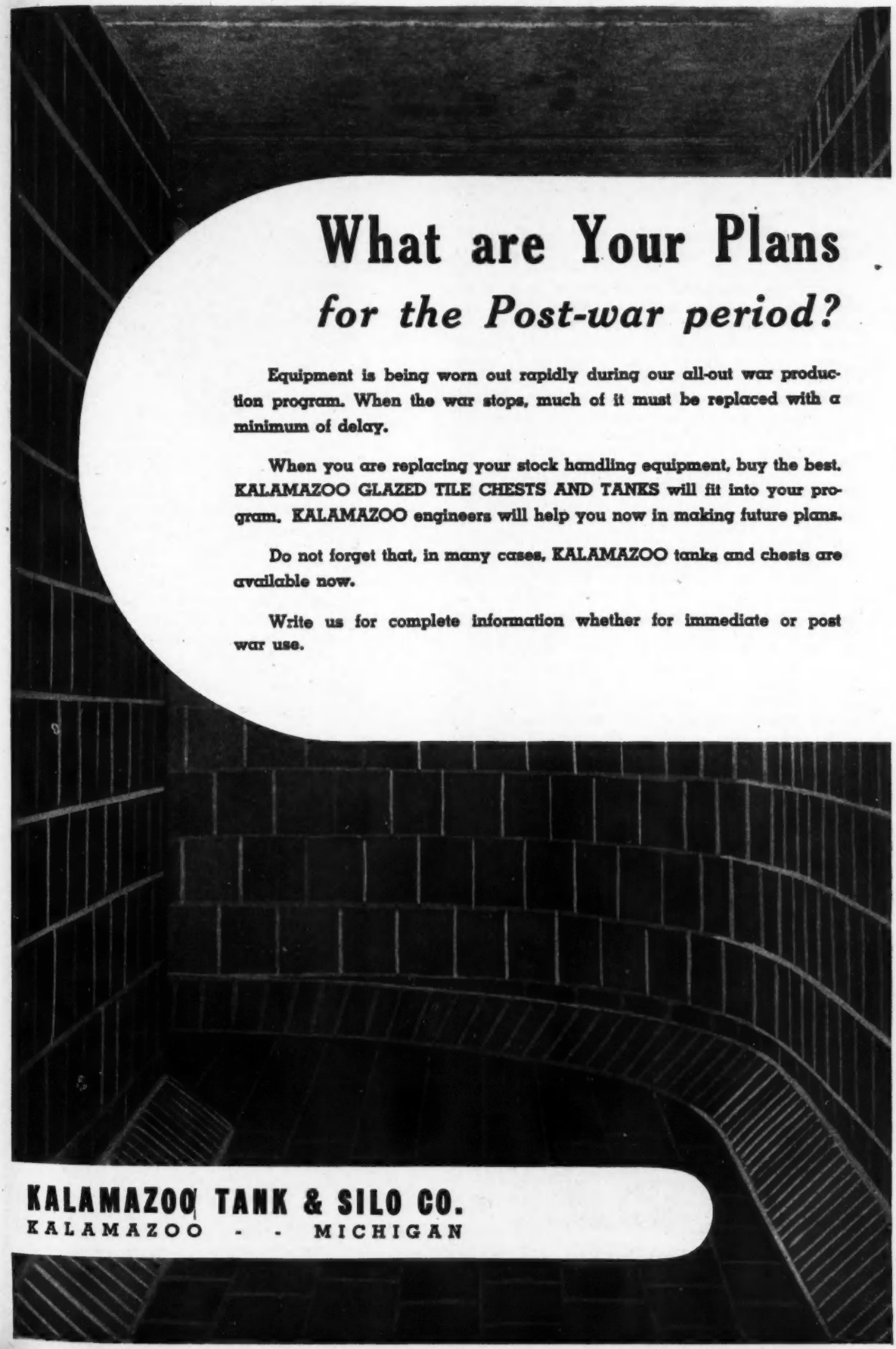
Production in 1943 Is Relatively High

The total production of paper and paper board for the first half of 1943, according to the best estimate within the industry, aggregated 7,780,000 tons, which is a decrease of 8.1% from the 8,437,000 tons produced in the like period in 1942. Orders were 5.3% above production for the period and 5.9% above the volume of orders in the first half of 1942. Unfilled orders amounted to 559,000 tons, or 89.2% in excess of unfilled orders at the end of the first half year in 1942.

The over-all production of paper and paper board, excluding building paper, in the first six months of 1943 is estimated at approximately 7,780,000 tons, compared with 8,437,700 tons in 1942. United States wood pulp production in the like period totaled 4,555,300 tons in 1943, compared with 5,521,600 tons in 1942. Pulpwood receipts were 6,575,000 cords in the first six months of 1943, compared with 8,356,000 cords in the like period of 1942; receipts being 13.3% under consumption and on June 30, were about 22% below 1942, according to estimates within the industry.

Wood pulp production has been maintained this year by drawing heavily upon pulpwood inventories and the government reports that the paper industry as a whole has been going into its stockpiles at the rate of about 100,000 cords of pulpwood, plus 33,000 tons of pulp and 20,000 tons of waste paper a month. Current inventories of pulpwood are down 28.7%, compared with last year; inventories of wood pulp are down 43%, and inventories of waste paper are down 49%. The government also reports that imports of Canadian pulpwood and wood pulp (about 20% of the total U. S. supply) will be down about a fifth in 1944, according to current indications. Receipts of pulpwood at this date reflect some improvement, and for September, 1943, were only 5% under September of last year.

The demand for paper is urgent and substantial improvement in the pulpwood supply is expected to result from the intensive campaigns now in progress.



What are Your Plans

for the Post-war period?

Equipment is being worn out rapidly during our all-out war production program. When the war stops, much of it must be replaced with a minimum of delay.

When you are replacing your stock handling equipment, buy the best. KALAMAZOO GLAZED TILE CHESTS AND TANKS will fit into your program. KALAMAZOO engineers will help you now in making future plans.

Do not forget that, in many cases, KALAMAZOO tanks and chests are available now.

Write us for complete information whether for immediate or post war use.

KALAMAZOO TANK & SILO CO.

KALAMAZOO - - MICHIGAN

Use and Maintenance of Battery Powered Trucks in Pulp and Paper Industry

By R. W. Hollingsworth, Gould Storage Battery Corp.

Because the popularity and use of battery powered trucks in the paper industry have been increasing steadily in the past five years the subject of battery care, operation and maintenance is one of primary importance.

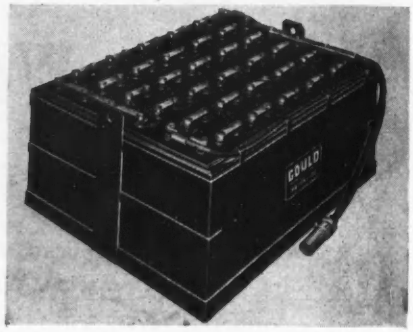
Battery powered trucks are employed to do numerous time-saving jobs in the production of pulp and paper and when production demands soar and time is short, a natural tendency is to overwork equipment if necessary. A storage battery, however, if overworked consistently will not render efficient service and will shorten its working life. On the other hand, if a storage battery is given proper care and a full eight hour charge for every cycle drawn from it, many extra years of service can be expected.

Manifold Uses in Paper Industry

In the paper industry battery powered trucks are found to be very versatile especially the hoist or lift type. Materials handling jobs must function smoothly and on schedule and therefore a truck that can go from one job to the next and do different types of handling has an advantage. A truck may be called upon to remove and transport a finished roll from the machine to the storehouse. While at the storehouse, this same truck, if a lift type, can raise it's platform, lower a pallet containing pulp, and transport that load back to the beaters. As can be readily seen, this type of material handling is efficient, and with a battery powered lift truck, no manual work is required aside from operating the controls, for the storage battery provides the electrical power for both propulsion and lifting. The pictures presented herewith illustrate various handling jobs.

The safety consideration of battery powered trucks is another of the outstanding features that make batteries extremely practical for use in paper mills. Where fire danger in the form of combustible material is so prevalent as in paper mills it behooves those in charge of material handling operations to eliminate all possible chances of a fire occuring. There is no fire danger from internal combustion because the truck is motivated by an electric motor powered by a storage battery. This leads to another safety in that no obnoxious nor dangerous fumes such as carbon monoxide are emitted which might cause sickness or even death to employees. Nor are there any vapors which might explode if a match were lighted or a spark were made by friction. These safety factors are of utmost importance and a prime reason for the popularity of electric battery powered trucks. They also effect lower insurance rates.

In Steel Tray



In Wood Tray

Another type of battery powered truck has recently been marketed by several major manufacturers which has an entirely different kind of use. This type is referred to as a hand lift truck or hand transporter. It resembles a hand operated skid mover or dollie, but has a storage battery for propulsion and lifting power. It is ideally suited for handling paper on skids and especially where aisles are narrow and large cumbersome trucks cannot be managed. These small trucks move forward or backward with finger tip control.

In general it can be stated that battery operated industrial trucks are more reliable and steady in performance than other types and over a period of years will give more service per dollar investment, hence the lower ultimate cost.

While the above information is not of technical nature it may contain some helpful hints as to care and operation of storage battery propelled industrial trucks. To broaden this phase, there is listed below the data from page 22 on the Care and Maintenance of Your Battery as outlined in the new Industrial Truck and Tractor Bulletin No. 100 now being released by the Gould Storage Battery Corporation.

1. Use Distilled or Approved Water.

Some undistilled water contains foreign particles and chemicals which are harmful to lead acid batteries. If distilled water is not available, send sample of water to Gould for laboratory analysis and be safe.

2. Fill to Proper Level.

When replacing water evaporation, do not spill water and fill to proper height above baffle. See catalog data for height.

3. Keep Battery Clean.

Do not allow dirt to accumulate on the top of a battery, as this may be the means of permitting a flow of current which will reduce the efficiency of your battery.

4. Keep Open Flame Away from Battery.

Battery gases are explosive. A flame nearby may cause an explosion.

5. Keep Tools and Other Metals Away from Top of Battery.

A tool carelessly laid across the connectors will cause short circuits.

6. Broken or Cracked Jars or Covers.

Do not cut out of the circuit damaged or dead cells. Remove and replace at once.

7. Avoid Excessive Operating Temperatures.

Do not operate your battery at a temperature in excess of 110°F. Discontinue charging when necessary if temperatures in excess of this are encountered.

8. Keep All Batteries in Charged Condition.

Do not permit a battery to remain idle until it becomes fully discharged. Always recharge a discharged battery immediately.

9. Insulate Charging Rack.

To eliminate possible grounds between steel trayed battery and charging rack, a non-conducting insulation should be provided.

10. Keep Records.

Daily records of temperature and specific gravity should be kept. Review monthly to watch for consistently improper conditions.

11. Rotate Batteries.

If continuous truck operation is required for more than one shift of 8 hours and spare batteries are utilized, keep all batteries in service and rotate in regular order.

Charging Information

12. Use Correct Charging Rate.

If manual method of charging is used, care should be exercised to follow recommended charging rates as shown in the technical data section of this bulletin. If automatic method of charging is used, follow the recommended finishing rate in this bulletin. It is recommended wherever possible that a minimum charging time of 8 hours be provided.

Trucks at F. N. Burt Co. Plant, Buffalo, N. Y.

13. Check Ampere Hour Meters.

Meters sometimes get damaged or wear out and a periodic check up will prevent improper charging which results in shorter life for your battery.

14. Avoid Over Discharging.

By draining the capacity of a battery below normal, its life and performance are materially reduced. In no case should a battery be discharged below recommended specific gravity as shown on your Gould ampere hour charging chart.

15. Avoid Over-Taxing Battery.

Normal operating demands should not exceed one cycle per day. Spare batteries should be provided for demands in excess of this. It is recommended that not more than 80% of the capacity of a battery should be used except in emergencies.

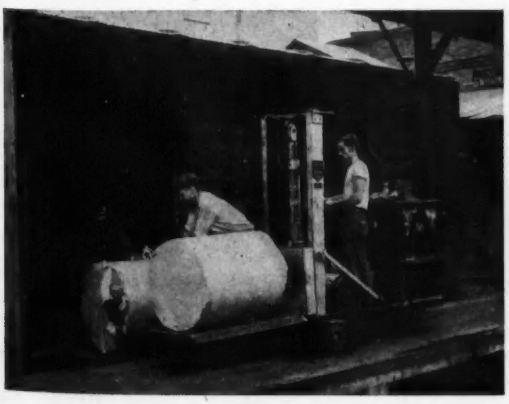
16. Regular Equalizing Charge.

If your battery is fully discharged daily an equalizing charge should be given once each week by continuing the finishing charge rate until the specific gravity of the electrolyte remains constant for two consecutive readings taken at one hour intervals. If not cycled daily equalizing charges may be given at less frequent intervals.

17. Maximum Specific Gravity Varies With Battery Age.

In setting your ampere hour meters, consult your Gould Ampere Hour Meter Charging Chart for variations in setings as battery becomes older. Be guided by the table shown for the particular age of your particular type industrial truck battery.

The above information and suggestions are offered as basic principles only and for further detailed information on your particular battery questions or problems, write to the Sales Promotion Department, Gould Storage Battery Corporation, Depew, N. Y.



Showing Trucks in Action at Plant of American Salesbook Co., Niagara Falls, N. Y.

Complete Largest Chlorine Plant

Completion of the largest chlorine plant ever built as a single unit East of the Mississippi River was announced here today by Columbia Chemical Division of Pittsburgh Plate Glass Company, operators, and the H. K. Ferguson Company of Cleveland and New York, industrial engineers and builders.

Located at Natrium, W. Va., in a section noted for its wealth of natural resources, the new plant was constructed on schedule and has been in operation for more than a month. It was financed by Defense Plant Corporation.

In addition to manufacturing liquid chlorine — used for hundreds of industrial applications for war material — the plant also produces caustic soda as a co-product. Exact capacities were not announced, although Ferguson engineers, leaders in the field of chlorine plant construction, said the plant was "almost as large as the biggest ever built as a single unit at Las Vegas, Nev." That plant was designed by the Ferguson Company.

Commenting on the size of the new facility, it was pointed out that there are plants East of the Mississippi with greater capacity than the new Pittsburgh Plate installation, but they were expanded over a period of time rather than having been designed as a single unit.

The new plant is located on the bank of the Ohio River, about 35 miles below Wheeling, adjacent to one of the richest salt veins in that area. The site was chosen by Pittsburgh Plate and Defense Plant Corporation officers because of the availability of salt, basic raw material, coal and both water and rail transportation.

Manufacturing chlorine from salt brine—salt water—requires an electrolytic process employing miles of pipes, thousands of feet of electrical conduit, scores of tanks and hundreds of vat-like pieces of equipment called "cells." The problem is to isolate the chlorine from the salt, known chemically as "sodium chloride."

The process starts in a million-gallon pool, where salt brine is stored after being pumped from mile-deep wells, and the concentration is almost strong enough to support a human being floating in it. The wells are actually 6800 feet deep, and are believed to be the deepest salt wells in the world. The brine flows from the pool to a series of brine treatment tanks in the main plant area about 750 yards distant, where impurities are removed before it enters the cells. In the cells, low voltage high amperage direct current is passed through the liquid and a decomposition into chlorine gas, hydrogen gas and a liquid called sodium hydroxide (caustic soda) results.

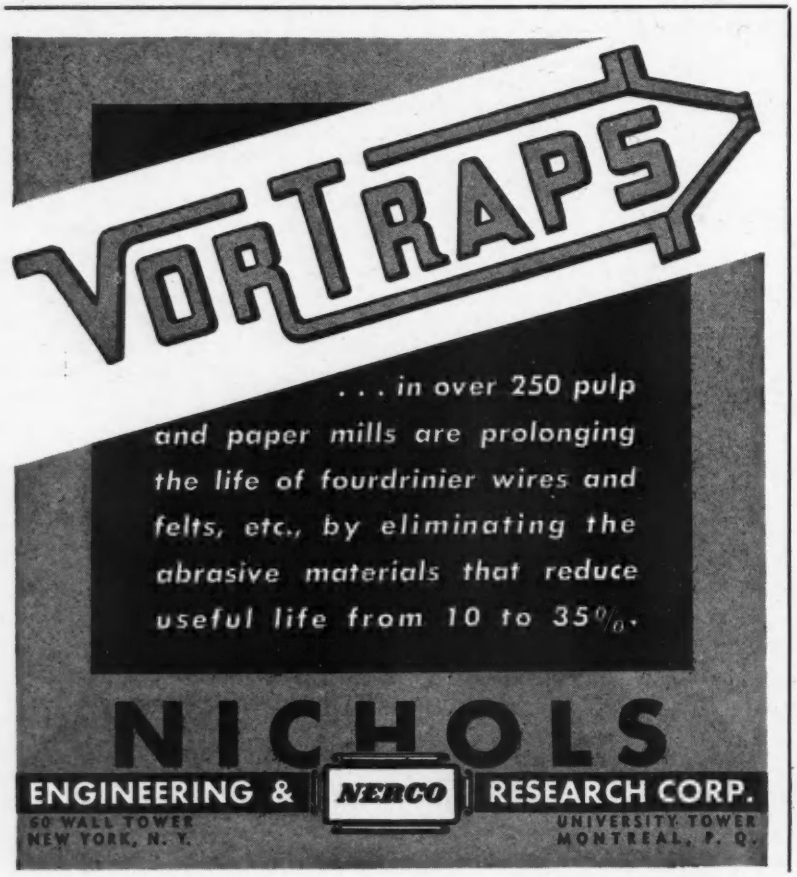
The chlorine gas is piped to a "liquefaction" building, where it is cooled and dried by refrigeration. The finished product is liquid chlorine and it is piped directly into tank cars at a railroad siding next to the building.

The hydrogen gas is caught and marketed commercially or used in other processes at the plant site.

The sodium hydroxide must be purified, and the resulting caustic soda is often as valuable as the original chlorine. After leaving the cells, the liquor is sent to storage tanks, then to the caustic evaporator building where sodium hydroxide and unaffected salt are separated. Since only half of the original salt decomposes in the cells, the part which goes through the process unaffected is recycled after impurities have been removed. The caustic soda is evaporated to the desired strength, and it, too, is shipped out in tank cars in liquid form.

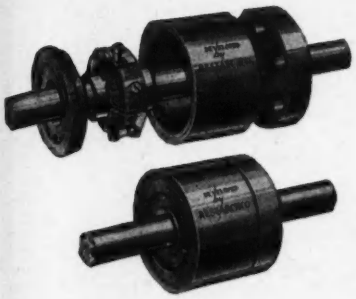
The plant consists of six principal buildings, all functional in design and construction, and some making use of second hand steel frames. They include a chlorine manufacturing building, machine shop, power house, caustic manufacturing building, administration building and combination employment office and gate house.

Construction of the power house was one of the most interesting phases of the building program, according to members of The Ferguson Company. Because of its location on the water front, it was necessary to sink huge caissons below the water line to solid rock. Extensive coal handling facilities were built in conjunction with the power house, and a giant crane atop a concrete pier unloads barges and swings its boom to the coal pile in one swoop.


VORTRAPS
. . . in over 250 pulp and paper mills are prolonging the life of fourdrinier wires and felts, etc., by eliminating the abrasive materials that reduce useful life from 10 to 35%.
NICHOLS
ENGINEERING & NERCO RESEARCH CORP.
60 WALL TOWER NEW YORK, N. Y.
UNIVERSITY TOWER MONTREAL, P. Q.

New Researchco Clutch

The Amalgamated Engineering and Research Corporation, Chicago, better known in the trade as "Researchco", announces a new type of automatically engaging and self-disengaging centrifugal clutch. This new clutch which can be produced in an unlimited range of sizes and capacities, can serve either as a coupling between shafts or as a driving pulley or gear in a transmission, as well as a starting cushion between power units and driven mechanisms.



TORKONTROL CLUTCH

This new unit which is known as the "Torkontrol" consists of a partially filled oil chamber fitted with a freely rotating hub, which carries a series of movable wedge shaped flyweights. As the hub revolves these weights fly outwardly and engage the internal rims of the outer case binding the hub and shell into a functionally solid pulley or coupling.

This unit works equally well in either direction (hence is reversible) and is "set" to engage or release at a given speed, and to slip in case of overload.

The manufacturer claims that this unit permits the use of smaller engines or motors which start without load, give smooth cushioned application of power, straight line acceleration with resulting saving in operating cost.

"Torkontrol" clutches have been built in all sizes from ¼ hp. to 500 hp. for both built-in and general application.

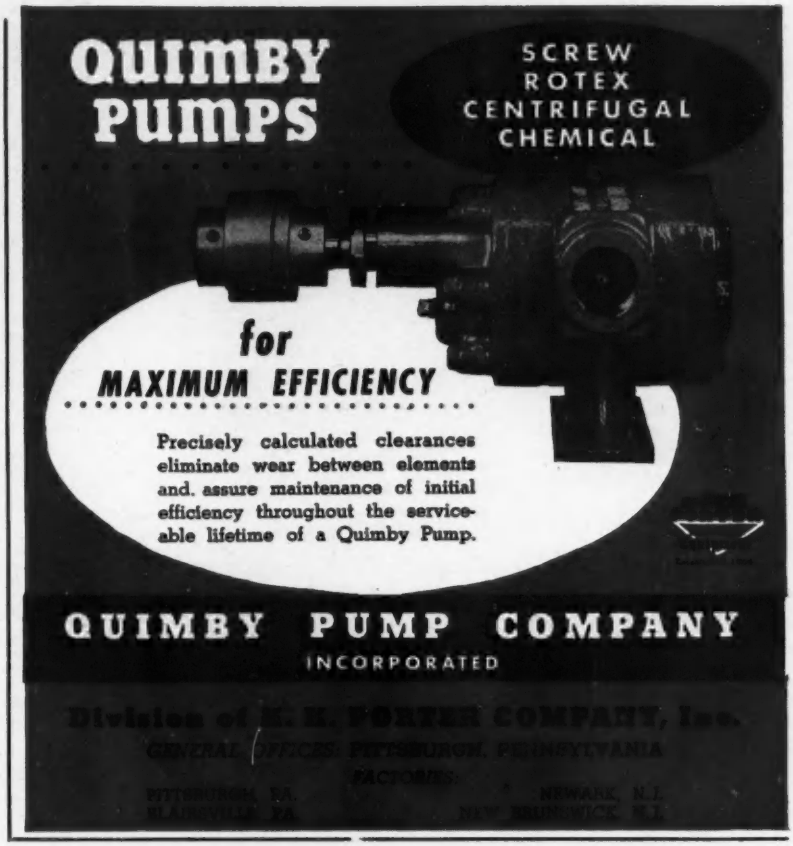
New Allis-Chalmers Pump

An improved automatically controlled valve is a distinctive feature of the new Type AO self-priming pump announced by Allis-Chalmers Manufacturing Company, Milwaukee, Wis. The design and operation of its valve arrangement is an important factor in the quick and effective self-priming action of this pump.

Priming of the Type AO pump is accomplished as the motion of the water throughout the pump runner and the volute passage carries behind it a slug of air, drawing air in the suction passage through the impeller and out through the priming chamber. This hydraulic action lifts the column of water in the suction line and achieves the same results as would a separate vacuum pump. The priming valve closes slowly during this process, acting against a spring tension which governs the rate of priming and the static height of the priming suction lift. The automatic closign of the valve after complete priming prevents water from bypassing back to the suction chamber, with resultant power loss.

The pump impeller has an unusually thick vane with rounded inlet edges, permitting the pump to pass stringy materials and fairly large solids.

Allis-Chalmers plans a complete line of the self-priming Type AO pump, from 1 to 6 inch size, although only 2 inch and 3 inch sizes are ready for immediate sale. The entire line of pumps will range from a very small capacity to 1400 gpm and up to heads of 100 feet or over. The self priming device incorporated in these pumps is also adaptable to use with other pumps, particularly the single suction type. Further details may be obtained by writing the manufacturer.



Pipe Bending Handbook

The Copper and Brass Research Association announces the publication of a new and complete treatise showing methods and devices for bending pipes and tubes of copper and its alloys. This book has been prepared at consumers' requests for authoritative information on this subject. It contains 80 pages of text with 113 figures and illustrations including 35 full pages of unit weights of tubes of different alloys with varying diameters, wall thicknesses and shape, as well as pertinent information on the chemical and physical properties of such pipe material.

The text covers subjects such as hot and cold bending, minimum radii, temper, the use of mandrels of various types and many other essential factors. Bending with the use of filler materials such as sand, rosin, salt and low melting temperature alloys is described and illustrated. Step by step procedures for both smooth and wrinkle bending of large diameter pipe show methods and equipment in considerable detail.

So far as known it is the most complete treatise dealing exclusively with bending tube and pipe that has ever been published.

GENERAL VIEW BOYER PLANT OF AUSTRALIAN NEWSPRINT MANUFACTURERS, LTD.

Paper Making and Control in Australia

By Howard Daniel and Minnie Belle

The paper industry in Australia has been hit by the double-barrelled impact of a war economy—increased demand for the products of the industry and increased difficulties in securing the necessary raw materials. As a result of the war new uses for paper developed in the munitions industry and as substitutes for other materials such as jute and timber. Paper imports fell because of the shortage of shipping space and the governmental policy of restricting imports to conserve foreign exchange. Pulp imports, too, were affected, since 80% of the pulp purchased by Australia had come from Scandinavia. Yet it is during the war that the manufacture of paper, including newsprint as well as other types of paper and boards, has expanded considerably. The production of pulp from the locally abundant hardwood sources, which had been under investigation for some time, has become a reality as a result of wartime need.

Only a few years ago there was only one manufacturing firm in Australia, the Australian Paper Manufacturers, Ltd., and even this company was importing all of its main raw material—wood pulp. There are now three companies producing paper and various paper products, and a large proportion of these products are being made from Australia's own forests. As a result of much experimentation by chemists on the making of wood pulp from native Eucalyptus hardwoods, Australian pulp and paper-making factories are now in production. 2,000 tons of Tasmanian hardwood logs were sent to a Canadian mill for commercial tests, and paper experts were brought to Tasmania to inspect timber and conduct experiments. The most extensive logging system ever organized in Australia is in the swamp gum forests at the head of the Derwent Valley railway line, near Fitzgerald, Tasmania. With a comprehensive program of reafforestation, and allowing 45 to 50 years for regeneration, there is enough timber in these forests to produce 100,000 tons of newsprint a year indefinitely. Paper plants and mills have been erected at the cost of millions of pounds, thousands of workers have been employed, and paper from native wood has largely displaced the imported product.

Australian Paper Manufacturers

Australian Paper Manufacturers, Ltd. has remodelled its existing plant, employing the latest technical developments. In its five mills are produced a great variety of types of paper. Its yearly output is about 125,000 tons and 80% of the raw materials used comes from local sources. It is a 4½ million pound organization with 3200 workers and many hundreds more indirectly employed in the lumbering and transport of pulping timbers. Its wood-pulping plant at Maryvale, Victoria is the biggest wood-pulping plant in the southern hemisphere; a large paper mill adjoins it in which is one of the fastest and finest paper-making machines. One of the largest machines in the world for the making of glazed paper was installed in the mill at Fairfield, Victoria; a new

large-scale mill for the production of paperboard was constructed at Botany, New South Wales.

Australian Paper Manufacturers is supplying the Department of Munitions with many thousands of tons of papered wood cellulose which, after treatment with nitric and sulphuric acid, is mixed with nitroglycerine to form cordite, the chief propellant explosive of modern warfare. Many others of its products have war uses, in the packages and containers for the safe transport of military equipment and supplies, in the internal structure of many ammunition products, in electrical and insulating papers, etc. The supplying by this company from local resources of the greater part of the nation's needs for wrapping paper and cardboard has saved Australia foreign exchange as well as invaluable shipping space.

Associated Pulp and Paper, Ltd.

Two other paper making concerns are operating in this country with eucalyptus pulp as their raw material—Associated Pulp and Paper, Ltd. at Burnie, Tasmania and the Australian Newsprint Manufacturers, Ltd. Mill at Boyer, near Hobart. Because of the essential needs of both government and industry for paper, the operations of Associated Pulp and Paper, both in the mill and in the forest, have been declared "protected." A Commonwealth Annexe, which will be operated under the company's control, is being built and equipped at Burnie at government expense to use surplus chemical products of the company's paper-making operations; liquid chlorine is produced here for the Ministry of Munitions. By cutting areas in a fixed order and reafforesting, the company at the end of thirty years will be able to cut over the same areas. Its production is capable of further expansion, not only in pulp and paper, but in other products in which cellulose in some form is used.

Australian Newsprint Manufacturers, Ltd.

Wood used at the Boyer Mill of Australian Newsprint Manufacturers comes from the company's own logging operations in the tributary valleys of the upper Derwent river. Sulphite pulp used in the paper manufacturing process is now imported from Canada, but a chemical pulp mill is to be built to produce a fiber to replace it. If no newsprint could be imported for the duration, the Boyer mill alone produces enough to permit all daily papers in Australia to continue publication as four-page newspapers somewhat similar in appearance to the average wartime English dailies.

Regulations of the Use of Paper

In spite of these remarkable developments in the paper industry, stringent control of the use of paper in printing and publishing, and in manufactured articles of all kinds was essential. The first regulation was the National Security (Metal Foil and Paper) Regulations of February 26, 1941 which delegated to the Minister for Trade and Customs the power to prohibit the use of metal foil and paper for any purpose and to restrict publications and advertising matter. Further Metal Foil and Paper orders implemented these powers through their enumeration of many specific articles which can be manufactured from paper only under certain conditions. Since the shortage of paper is still acute, a more comprehensive order (June 18, 1943) provides for a Controller of Paper in the Department of Trade and Customs whose powers cover the manufacture and disposal of all types of paper except newsprint or sensitized paper. Now no paper or paper goods may be manufactured without consent from the Controller. This officer may prohibit any person from processing goods from paper, or from selling of paper or goods processed from paper; he may

(Continued on page 79)

FACTORIES OF ASSOCIATED PULP AND PAPER MILLS, LTD., BURNIE, TASMANIA

Fairbanks-Morse Paper Stock Pumps

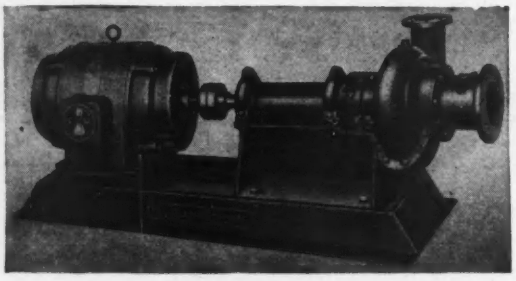
A new addition to their line of paper stock pumps has just been announced by Fairbanks, Morse & Co., consisting of a line of pumps of this type with closed impeller.

This means that the company has now made available to the trade their well-known paper stock pumps in 4, 5 and 6 inch sizes with both open and closed impellers.

Each has a definite field of application in pumping paper stock. The open impeller stock pump has been designed and developed primarily for handling clean homogenous paper stock devoid of long fibrous stock. The closed impeller design utilizes the renowned Fairbanks-Morse two vane stream lined trash pump impeller which has unusual ability to pass flexible trash and stringy material.

One of the several features of both types of pumps, according to the manufacturer, is that the volute casing is split diagonally along the centerline of the shaft to permit of easy and quick access and removal, if desired, of the entire rotating element without disturbing the suction and discharge piping or exposing the bearings.

New Bulletin No. 5460-1 illustrating and describing both types of pumps may be had on request to Fairbanks, Morse & Co., 600 S. Michigan avenue, Chicago, Ill.



FAIRBANKS-MORSE PAPER STOCK PUMP ON STURDIWELD BASE WITH F-M SPLASH-PROOF MOTOR DRIVE.

Guy E. McCorison Made Chief

WASHINGTON, D. C., November 24, 1943—Guy E. McCorison, of Appleton, Wis., has been appointed as chief of the Water-Proof Paper and Gummed Tape Section of the Converted Paper Products Branch of the WPB Paper Division, Rex W. Hovey, director of the Division announced.

Formerly Mr. McCorison was assistant sales manager of the Thilmany Pulp and Paper Company of Kaukana, Wis., manufacturers of specialty kraft wrapping and converted paper products. His duties will include supervision of all WPB orders, regulations and requirements affecting the production of waterproof paper and gummed tape.

Great Northern Nets $1.20

The Great Northern Paper Company and wholly-owned subsidiaries for the nine months reports net profit after $798,500 Federal income taxes was $1,200,585, or $1.20 a share, against $1,359,343, or $1.36 a share after $904,153 taxes, last year.

We're in it for the duration

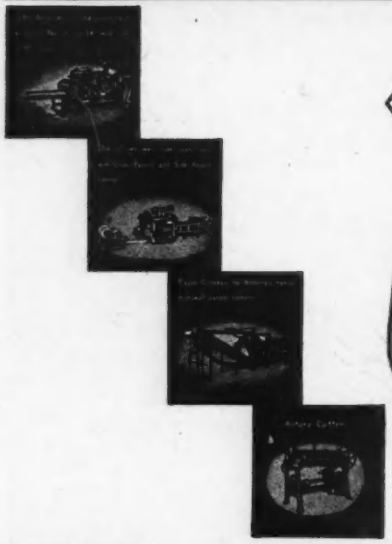
SINCE 1828

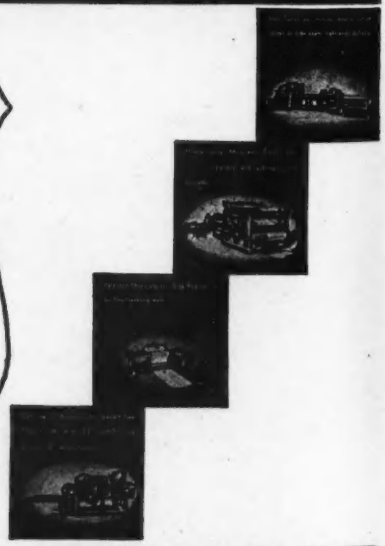
We have served the industry well, with the finest in Paper Mill Machinery.

NOW

our entire manufacturing facilities are engaged in turning out material for the mightiest and most formidable fighting machine our country has ever known.

While we cannot give you typical peacetime SW Service, we can supply you with replacements — under proper priority rating, of course.





THE SMITH & WINCHESTER

MANUFACTURING COMPANY

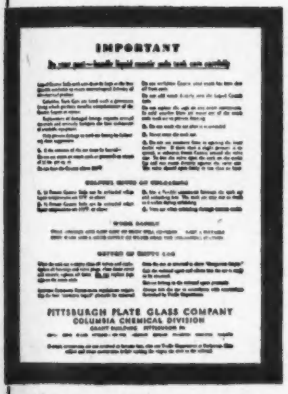
PLANT AND OFFICES AT SOUTH WINDHAM, CONNECTICUT

HAVE YOU HELPED AMERICA TODAY?

Here's How

To assure quick, safe unloading of Liquid Caustic Soda Shipments

Thanks to the splendid co-operation of consignees, railroads and shippers, a great wartime transportation record is in the making. As you know, *all* railroad cars are sorely needed. You can perform a genuine service for America by expediting the unloading of *all* shipments you receive—particularly where cars of special design are used, such as those required for Liquid Caustic Soda.


IMPORTANT

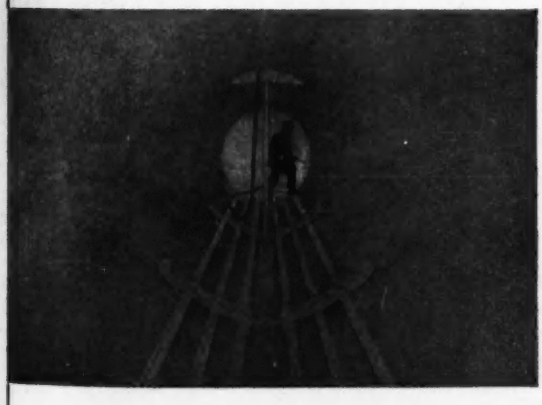
PITTSBURGH PLATE GLASS COMPANY
COLUMBIA CHEMICAL DIVISION

Send for Free Instruction Card

To help remind handlers of Liquid Caustic Soda of the care necessary in unloading tank cars, a special instruction card has been prepared by Columbia. Posted in prominent locations, this 11" x 14" card will help to prevent accidents and errors which cause delays and disrupt your operations. Cards are yours for the asking, regardless of your Caustic Soda supply. Send for yours today.

Maintenance Where It's Most Important

Columbia's patented lining for tank cars is one of the important factors enabling the first successful and practical shipping of 73% Liquid Caustic Soda. That's why this lining is carefully checked and maintained in perfect condition at all times. Owing to the pressure of war work, the outward appearance of these cars occasionally suffers. But inside—where it really counts—Columbia tank cars are 100% efficient.



PITTSBURGH
PLATE GLASS COMPANY
COLUMBIA CHEMICAL DIVISION
GRANT BUILDING . . . . PITTSBURGH (19), PA.

Chicago • Boston • St. Louis • Pittsburgh • New York
Cincinnati • Cleveland • Minneapolis • Philadelphia • Charlotte

COLUMBIA CHEMICALS

SODA ASH · CAUSTIC SODA · LIQUID CHLORINE · SODIUM BICARBONATE · SILENE EF (Hydrated Calcium Silicate)
CALCIUM CHLORIDE · SODA BRIQUETTES · MODIFIED SODAS · CAUSTIC ASH · CALCIUM HYPOCHLORITE
PHOSFLAKE · CALCENE (Precipitated Calcium Carbonate)

There's

always one in every mill
— The Flannel-Mouth,
The Blab,
The guy they gather round
for his amazing flow of gab.

A mill we knew was cursed with one such ever-talking bird
Who laid it on so thick one day, the strangest thing occurred.
His words just hypnotized the crew; they worked not while he spoke.
The oil-dry journals smoked; rolls stopped;
the stacks filled up with broke.
The machine worked on, but still they stood,
the Talker and the men
Till the mill was lost in a blizzard of broke, and never was found again.

"Loose talk can cost lives" . . . and it can cause serious production lags. If you're on Cheney Bigelow's mailing list, you'll be receiving this verse and sketch in poster form for your mill bulletin board. You can use it as a sugar-coated reminder to your crews to cut some of the unnecessary chatter.

CHENEY BIGELOW

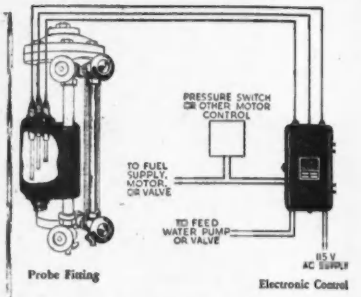
Fourdrinier Wires · · Dandys · · Cylinders · · Wire Cloth

CHENEY BIGELOW WIRE WORKS · 417 LIBERTY STREET · SPRINGFIELD, MASS.

New Fireye Control Series

Combustion Control Corporation, Cambridge, Mass., announces Fireye Electronic Feedwater Controls Series P156N, for maintaining constant boilerwater levels automatically, and for guarding against low-water hazards. Designed to provide the average power plant with low-cost automatic control, the equipment eliminates difficulties encountered with complicated mechanical devices and is guaranteed for an unlimited service-free life.

For automatic feedwater pump control and low-water protection,


PRESSURE SWITCH OR OTHER MOTOR CONTROL
TO FUEL SUPPLY, MOTOR OR VALVE
TO FEED WATER PUMP OR VALVE
115 V AC SUPPLY
Probe Fitting
Electronic Control

Typical FIREYE Installation For Automatic Boiler Feedwater Control And Low-Level Safeguard

Fireye Type P156N is used with Probe Fitting Type H53, as shown in the accompanying illustration. The probe fitting may be mounted parallel to the water column, or directly on the boiler and is wired to the electronic control. Three probes within Type H53 mark boiler feed-water pump on and off levels and a low-water danger point. The top and middle probes determine the high and low levels at which the boiler feedwater pump is turned on and off to maintain constant water level. When water falls below the middle probe, Fireye closes the electrical circuit controlling the pump and water feeds into the boiler. When the level rises to the top probe, the water itself acts as conductor of a minute electrical current which operates the electronic control and turns off the pump. The pump remains inoperative until boiler water again falls to the level of the middle probe. The lowest probe defines the danger point below which boiler water must not fall. Should water drop below this safety probe, Fireye immediately shuts off the fuel supply and sounds an alarm.

Types are available also for automatic pump control only, or for low-level protection only.

Fireye boiler Feedwater Controls are supplied as standard for boiler pressures to 300 pounds and for operation from a supply of 115 or 230 volts A. C. 60 cycles.

Obituary

Earl E. Berry

Earl E. Berry, vice president of the Beloit Iron Works and a director of the War Production Board at Washington, D. C., died November 9 at his home on Terrace Lane, Beloit, Wis.

Mr. Berry had not been in the best of health the last three months. Strain, overwork and nervous tension necessitated by duties at Washington caused his illness.

Mr. Berry was born Oct. 29, 1891, at Montpelier, Vt. He was married to Miss Wilma Ellis, Aug. 2, 1914, at Angola, Ind.

Following Mr. Berry's earlier education, he gained

EARL E. BERRY

scholastic attainments at Tri-State Engineering college at Angola, Ind. He was graduated there in 1912.

Associated with the Western Gas and Construction Company as an engineer at Fort Wayne, Ind., he later was general manager of the American Road Machinery Company at Kennett Square, Pa. He held that position during World War I, and his record reveals he did an outstanding job in the building and furnishing of war materials at the company's various plants during that time.

While achievement in industrial and manufacturing problems marked his ability, his contributions in various branches of engineering include many inventions, and he held many patents.

Mr. Berry came to Beloit and started his association with the Beloit Iron Works in 1921 and in October, 1930, he was named vice-president in charge of engineering. An engineer with an outstanding record in his field, his part in the progress and development of paper-making and paper-making machinery quickly won for him a ranking place in that industry.

He was a member of the Technical Association of Pulp and Paper Industries, the American Society of Mechanical Engineers and of the First Congregational church at Beloit.

Private funeral services were held at the home on Terrace Lane. Burial was in Eastlawn cemetery.

NOW—and After Victory

Saving fuel, making possible increased boiler capacity, meeting the requirements for exacting control, supplying positive drainage of paper and board machines, enabling production units to meet their potential efficiency, improving quality of product, eliminating lost time, making man power more effective—these are advantages which Stickle Equipment affords.

Stickle paper and board mill service has been built largely through helping individual mills solve specific problems of drainage, control and waste. Stickle Equipment is a result of careful, thoughtful, practical engineering which has triumphed in devices whose simplicity of construction is exceeded only by their effectiveness in operation. Durability and dependability—positive action—freedom from involved mechanism—production results in excess of promises—are some of the reasons why Stickle Equipment was already installed for service during this war period in leading mills throughout the United States and Canada.

Helpful Bulletins for the Asking

Bulletin No. 60 **Stickle Steam System for Paper Manufacturing, a comprehensive discussion of complete Stickle Systems for paper mills. Also supplementary Bulletin No. 60C.**

Bulletin No. 117 **describes various sizes, types and construction of Stickle Open Coil Feed Water Heaters.**

Bulletin No. 200 **supplies data and information on Stickle Triplex Oil and Steam Separators.**

Bulletin No. 50 **explains how Stickle Differential Drainage and Boiler Return System returns condensate to boilers at a temperature only 15 to 20 degrees lower than the temperature of steam at operating pressure.**

Bulletin No. 315 **Steam Traps (Series AE) for larger equipment operating at medium and high pressures.**

Bulletin No. 415 **Steam Traps (Series T) small to large, for equipment operating at low and medium pressures and for vacuum service.**

Bulletin No. 115 **Steam Traps (Series 100) for smaller equipment such as unit heaters, operating at medium and high pressures.**

Bulletin Nos. 235 and 435 **describing Regulating and Reducing Valves, small to large sizes, Single- and Double-seated construction, Balanced and Semi-balanced in Lever Operated, Lever and Weight Loaded Diaphragm Operated, Spring Loaded Diaphragm Operated Types. Self-contained and Pilot Operated.**

STICKLE

STEAM SPECIALTIES COMPANY

2245 VALLEY AVE., INDIANAPOLIS, INDIANA

There is a Lot of "KNOW-HOW" Built into These Pumps

The new Ingersoll-Rand vertical stock pump is built to meet the exacting requirements of the paper industry.

The pump is simple and all parts are accessible. It can be completely dismantled without disturbing the discharge piping.

Flow of stock to the pump is downward and directly into the impeller. A heavy renewable shroud permits the restoration of the original pump efficiency after prolonged service.

These features and the fact that the pump requires little floor space mean real savings.

Ask our engineers for complete details. Ingersoll-Rand Company, 11 Broadway, New York 4, N. Y.

Ingersoll-Rand

Cameron Pump Division

10-359

Backlog Mounts

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., November 22, 1943—Paper demand for all grades continued heavy last week with manufacturers and jobbers unable to fill all orders, but doing the best possible under conditions. The back log of orders continued to mount and little improvement is expected for some time. Virtually all prices were at ceiling levels.

Perhaps the most noticeable bottle neck in the Indiana industry comes from the box and container trade. Much of the local output is going to either war industries or directly to the armed services. This leaves little for the domestic trade. What non-essential industries will do for Holiday boxes is a considerable problem. Orders have been in for many weeks, but deliveries are mighty few. The candy and jewelry trade is particularly hard hit this year.

And in the meantime, the quasi essential industries, such as dairies and others are finding it more and more difficult to secure containers. It is said the increasing uses found for paper products in the armed services has increased the demand from these sources.

The local campaign for the collection of waste paper and rags is gaining some momentum, but is handicapped to a great extent by a certain apathy on the part of the public. There has been plenty of publicity in newspapers and over local radio stations. There is a bottleneck in the collections. Trucks and truck drivers are at a premium. Mill demand for paper continued heavy last week with ceiling prices being paid. The rag demand also was good with ceiling prices.

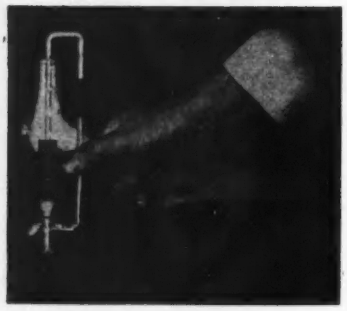
Little demand was seen last week for roofing or building paper. It is believed demand for these items are about over for the year. Nor is there any likelihood of any improvement for next spring. Building here is strictly restricted, but some repair work is being done.

Tissues were in good demand last week as were all grades of kraft. Newsprint also was active.

Paper mill demand for waste paper continues very heavy.

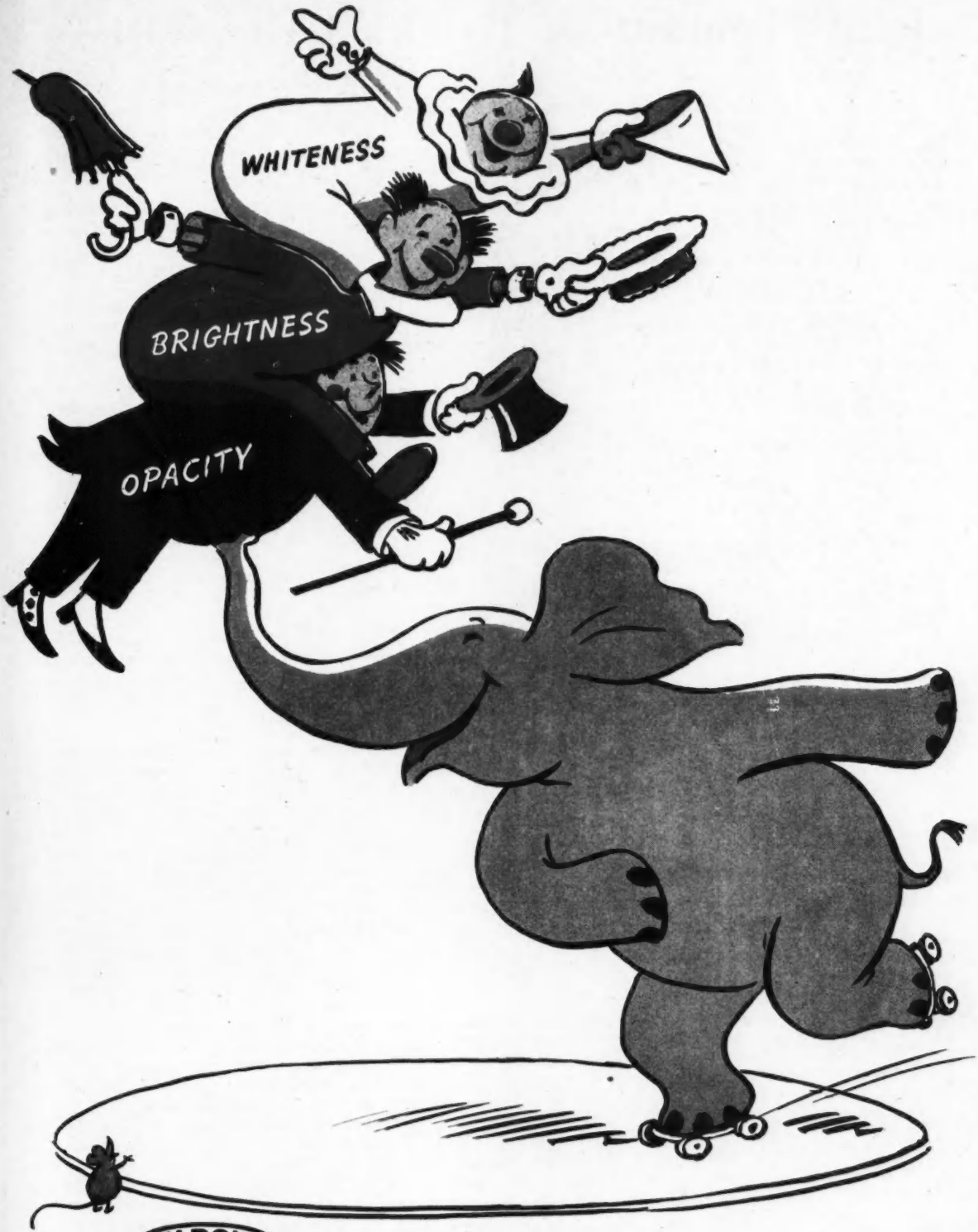
Automatic Pipette

Battery reactions are said to be made faster and more accurately with this "automatic" pipette than with the conventional type. The measuring chamber is filled (slightly to overflowing) by tilting the flask to pouring position. When flask is returned to vertical, the surplus drains



EMPTYING CONTENT

back, leaving the chamber with an exactly predetermined volume. Its content is let into the beaker by raising the plunger-lever with the thumb (as represented in the illustration) or by engaging the ring-hook with the far rim of the beaker and pressing downwards. Dispenser assemblies may be had for pipetted quantities from 5 to 100 cc, each dispenser operating with flasks holding 250, 500, 1000, 1500 or 2000 cc. Special combinations are also available. Automatic Pipettes, cataloged No. 850, may be ordered from the manufacturer, Macalaster Bicknell Company, New Haven, Conn., or Cambridge, Mass.



DU PONT

DU PONT "TI-PURE" *for better balanced papers*

(Titanium Dioxide)

E. I. DU PONT DE NEMOURS & CO. (INC.), PIGMENTS DEPARTMENT, 1007 MARKET ST., WILMINGTON, DEL.

Joint Committees To Open Bids Dec. 13

WASHINGTON, D. C., November 24, 1943—The Joint Congressional Committee on Printing has announced that it will receive bids on December 13 for 61,115,000 pounds of paper for the use of the Government Printing Office for the three months period beginning January 1. Under the present three month contract 79,630,000 pounds are being used.

Paper Asked For

The committee is asking for the following supply of paper:

2,500,000 pounds newsprint paper; 100,000 pounds telephone book news; 3,310,000 pounds machine-finish book paper; 150,000 pounds antique book paper; 3,050,000 pounds offset book paper; 76,000 pounds lightweight machine-finish book paper; 100,000 pounds 50% antique book paper; 2,450,000 pounds supercalendered book paper; 1,500,000 pounds machine-coated book paper; 600,000 pounds coated book paper; 40,000 pounds lithograph paper; 2,950,000 pounds mimeograph paper; 250,000 pounds U S M O safety writing paper; 18,300,000 pounds writing paper; 2,576,000 pounds map paper; 2,130,000 pounds manifold paper; 8,990,000 pounds bond paper; 938,000 pounds ledger paper; 2,870,000 pounds index paper; 445,000 pounds cover paper; 400,000 pounds manila paper; 260,000 pounds kraft paper; 500,000 sheets gummed paper; 120,000 pounds blotting paper; 20,000 pounds high-finish red sulphite; 100,000 pounds manila tag board; 1,100,000 pounds calendered tag board; 100,000 pounds jute tag board; 250,000 sheets railroad board; 500,000 pounds bristol board; 3,500,000 pounds postal card bristol; 45,000 sheets pressboard; 1,000,000 pounds news board; 690,000 pounds binder's board.

In cases where more than 1,000 reams are called for, proposals will be received for 1,000 reams or more.

Specifications Committee Reports

Following is the report made by the Paper Specifications Committee to the Joint Committee regarding the opening.

The Commitee on Paper Specifications respectfully submits its Forty-Eighth Report and the accompanying recommended schedule for paper for the public printing and binding and blank paper for the use of the Government departments and establishments in the District of Columbia for the term of 3 months beginning January 1, 1944.

Only a few changes of a minor character have been made in the specifications.

The stock requirement of supercalendered book paper, lots 33 to 36 inclusive, has been revised to permit the use of 10 per cent ground wood pulp, in view of the critical nature of chemical wood pulp.

The specifications for the packaging of chemical wood and rag content lithograph finish map and chart papers, lots 63, 64 and 65, lots 66 and 67, 68 and 69, have been changed to require the paper to be delivered on skids instead of being packed in wooden cases.

The requirement for finish of 50 per cent rag white chart lithograph finish map paper, lot 68, has been increased from 60 to 80 seconds.

The specification for acidity of chemical wood bond paper has been modified to include a pH requirement of 4.5 for the colored bond paper covered under lot number 103.

The thickness requirements of 230-pound chemical wood and 50 per cent rag index papers, lots numbers 183 and 184, lots numbers 189 to 192 respectively, have been changed from .0100 inch to .0105 inch to conform more closely to trade custom.

The weight requirement of white gummed paper, lot number 252, has been changed from 40 to 36 to conform to limitation order L-120 of the War Production Board.

The specification for U. S. postal card bristol covering lots 325 to 327 inclusive has been modified to require a diameter of 30 inches for 22-inch rolls.

This schedule embraces 138 lots. The quantity estimated for the term of 3 months beginning January 1, 1944, is approximately 61,115,000 pounds, as compared with 79,630,000 pounds for the previous contract period of 3 months.

Boston Paper Trade Meets

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, MASS., November 22, 1943.—With an attendance of 142 members and guests the fall meeting and dinner of the Boston Paper Trade Association at the Parker House November 17 was highly interesting and entertaining. President Irving N. Esleeck was in the chair.

Two new members were elected: H. J. Dowd, H. J. Dowd Company, Cambridge, Mass., proposed by Carl J. Knutson, was elected to regular membership, and M. C. Dobrow, secretary, Writing Paper Manufacturing Association, New York City, proposed by John D. Zink, to limited membership. Albert M. Eaton was transferred from regular membership to associate membership.

It was voted to send John H. Brewer, formerly general manager, Storrs & Bement Company, and a first vice president of the Boston Paper Trade Association, a telegram of congratulation on his promotion from Major to Lieutenant-Colonel in the Army Air Corps.

It was also voted to buy one $1000 E Bond. The association already possesses a number of War Bonds.

In a delightfully fascinating talk entitled , "Jeeps, Japs and Jokes," Jack Major, speaker of the evening, told about the Yanks in Australia, from which he had returned, stressing their cordial friendship with the Aussies, despite the fact that the Nazis, in their propaganda, would have it otherwise. His talk also supplemented during their presentation natural movies, including over 600 feet of film which showed our boys in the South Pacific; how they live, how they fight and what they are seeing. Other moving pictures showed the Bismark Sea Battle and technicolor films of animals and flowers in Australia.

Due to an accident, from which his friends wish him speedy recovery, Secretary Frank B. Cummings was unable to be present at the meeting. His place was taken by W. Edwin Porter, Jr.

LINKS IN THE CHAIN OF VICTORY

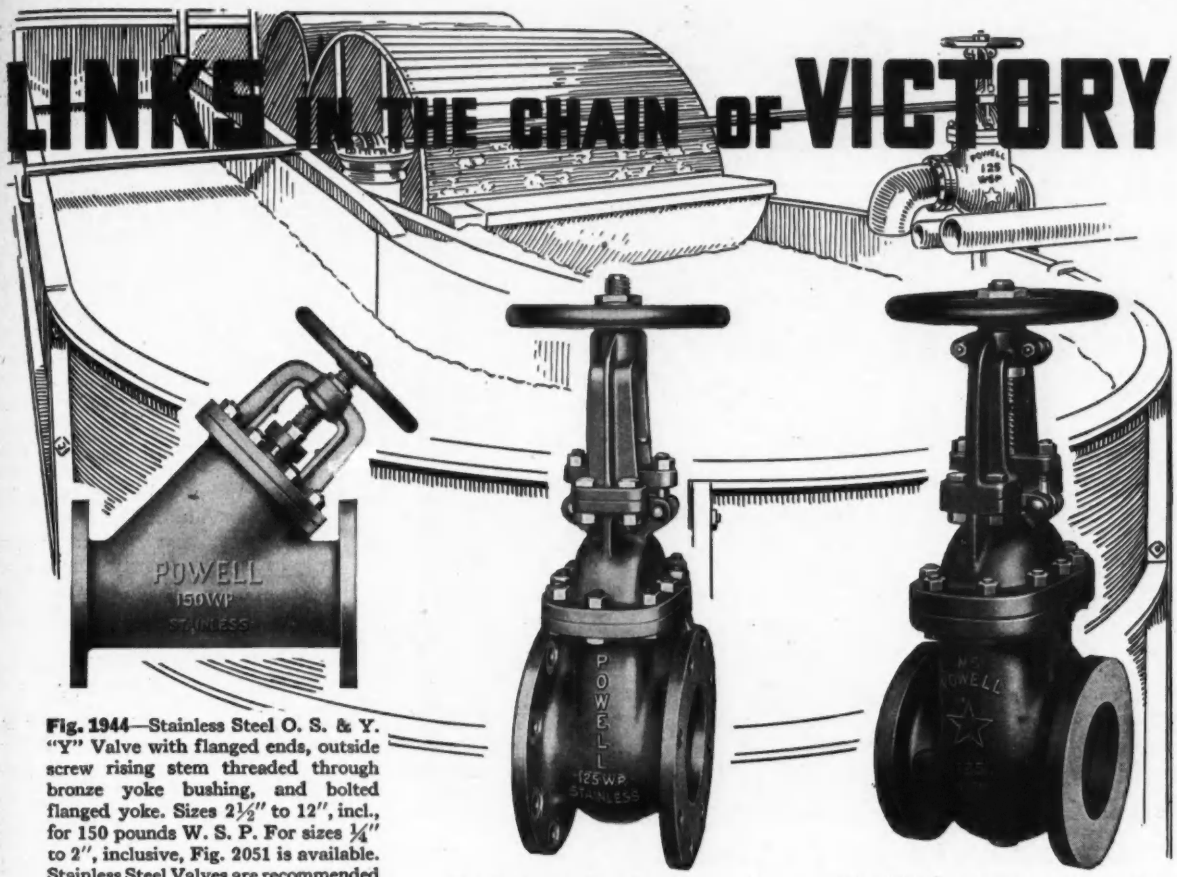


Fig. 1944—Stainless Steel O. S. & Y. "Y" Valve with flanged ends, outside screw rising stem threaded through bronze yoke bushing, and bolted flanged yoke. Sizes 2½" to 12", incl., for 150 pounds W. S. P. For sizes ¼" to 2", inclusive, Fig. 2051 is available. Stainless Steel Valves are recommended for handling sulphite liquors.

Fig. 2453—Stainless Steel O. S. & Y. Gate Valve, with flanged ends, outside screw rising stem threaded through bronze bushing in upper yoke arms, full flanged bolted yoke, and taper wedge solid disc. Sizes 2½" to 30", incl., for 125 pounds W. S. P. For sizes ¼" to 2", incl., Fig. 1969 is available.

Fig. 1816—All-Iron O. S. & Y. Gate Valve, with flanged ends, outside screw rising stem, bolted flanged yoke and taper wedge solid disc. Sizes 2" to 30", inclusive, for 125 pounds W. S. P. Figs. 1816 and 2161, are especially adapted for handling sulphate liquors (for black liquors special trim is available).

Fig. 2161—All-Iron O. S. & Y. "Y" Valve, with flanged ends, outside screw rising stem and bolted flanged yoke. Sizes 2½" to 12", incl., for 150 pounds W. S. P. "Y" Valves, because of greatly reduced pressure drop, are very suitable for low pressure steam lines.

Indispensable in times of peace, Paper is a vital necessity to a nation at war. And wherever paper is produced there must be valves—many valves—dependable valves.

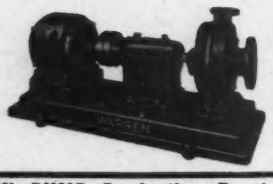
Powell devotes to the manufacture of valves—and valves only—the skills developed through nearly a century of *specialized* valve manufacture. That's why today POWELL Valves, specially designed and engineered for the paper industry, are truly important Links in the Chain of Victory.

The Wm. Powell Co.

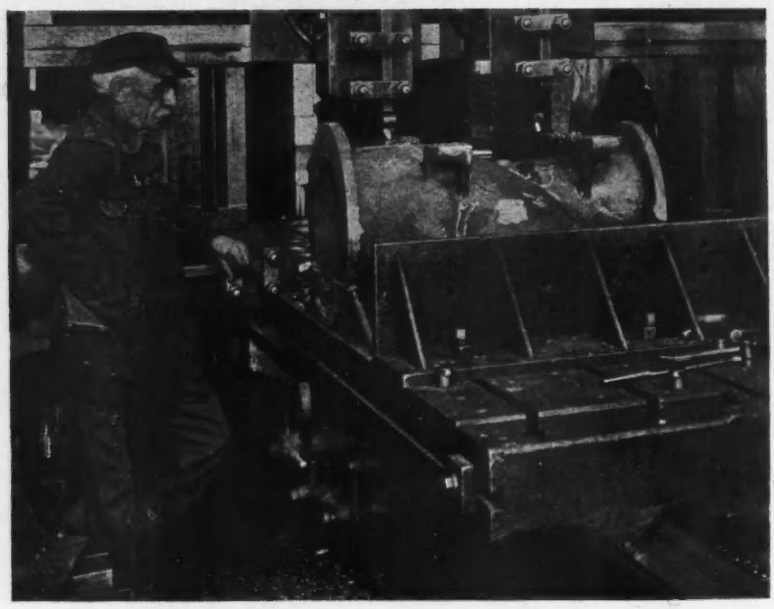
Dependable Valves Since 1846

Cincinnati 22, Ohio

POWELL VALVES



Fighters on the WARREN PUMP Production Front . . . No. 7 of a Series



MAESTRO OF THE PLANER . . .

MASTER OF MANY JOBS . . .

CHARLIE GARDNER

Charlie Gardner is a Warren Pump Company planer operator, par excellence. He has been one for many years. But Charlie is also handy at operating other machines, such as large horizontal and large vertical boring mills . . . and has had many years of machine shop experience, as well. The reputation that Warren Pumps have always enjoyed for efficiency, reliability, and economy would not have been possible without the skill, experience and "pride of workmanship" that Charlie Gardner and other Warren employees have always possessed to such a high degree. And those Warren employees who are not in the armed services now, are giving all their energies and skill to make the Warren Pumps that will fight for them on every front, to help bring Victory.

WARREN PUMPS

WARREN STEAM PUMP COMPANY, INC.
WARREN, MASSACHUSETTS

Micromax pH Recorders

Because of today's scarcity of chemicals and the difficulty of replacing worn-out wire, it is more than ever important that the old method of excess dumping of alum as a "cure-all" be discarded . . . and instead a definite record of pH in stock or white water be kept. Among the advantages said to be gained by a continuous and automatic record of pH are: greater uniformity of strength, texture and color; greater retention of stock going onto the wire and minimizing of white water losses; longer wire life because of lower acidity when pH is maintained at the higher values; and a saving in alum because it eliminates the necessity of excess dumping "to be on the safe side." Of timely interest to the paper mill men, therefore, is a general catalog just issued by Leeds & Northrup Company describing an equipment which continuously and automatically measures pH so that the operator can "see" pH at a glance or refer to a pH record drawn on an easily-filed chart.

A Micromax pH recording equipment consists of two elements: an unusually rugged glass electrode assembly and a Micromax indicating recorder. A continuous sample of stock or white water flows through the electrode assembly chamber. A voltage set up between the electrodes is indicated and recorded in pH units by the Micromax instrument.

Where an unusually bold guide to pH is desired, the round-chart Model R recorder is used. It indicates by means of a big pointer which moves around a large dial and, in addition, draws a record on a 24-hour chart. For a more detailed record of pH, over a longer period of time, a strip-chart Model S recorder is used. Both units are standard, built for long service, and the equipment is quickly and easily installed.

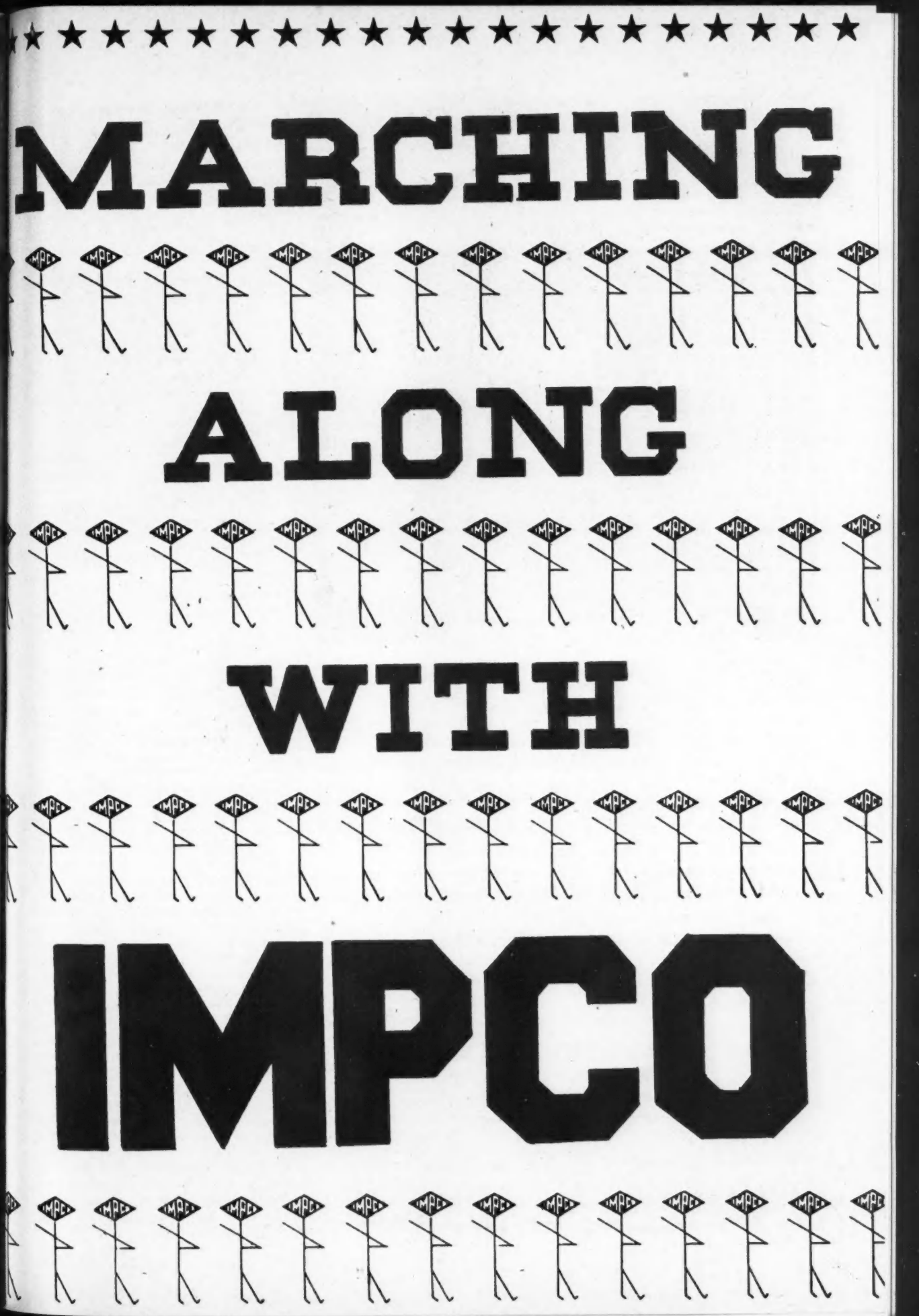
For a copy of a general Catalog N-96 (1), "Micromax pH Recorders," write to Leeds & Northrup Company, 4934 Stenton Avenue, Philadelphia 44, Pa.

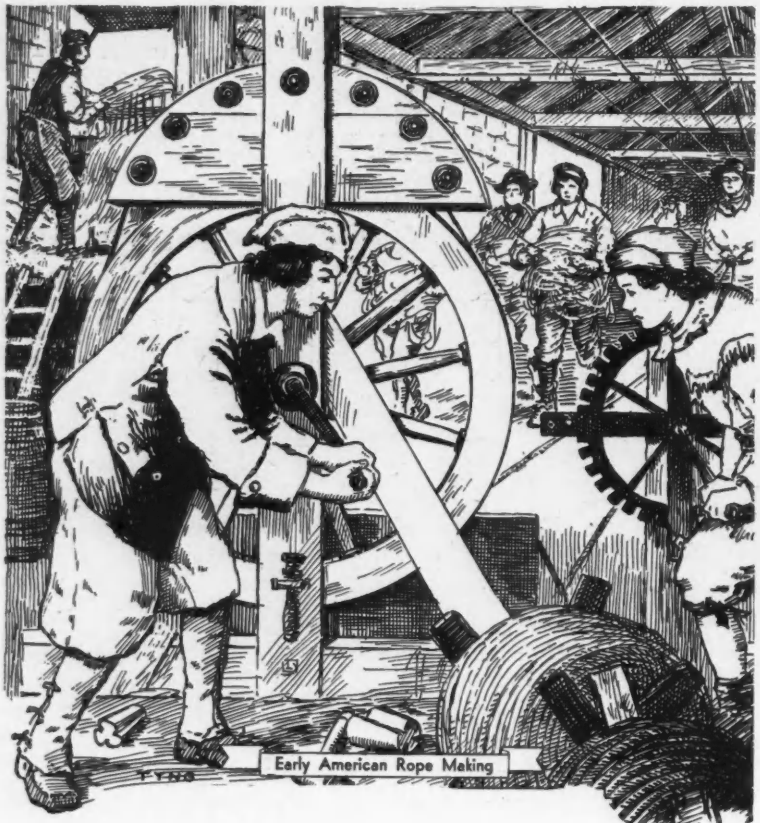
Postwar Planning

In line with one of the major interests of business today, the Policyholders Service Bureau of the Metropolitan Life Insurance Company has issued as the first of a series of projected reports on the subject of postwar planning, a study entitled, "An Introduction to Postwar Planning." This study is designed to put before business executives information that will, first, assist them in determining the need for postwar planning within their own organizations, and second, help them to define more accurately the scope of postwar planning activities that will best meet the need of their own situations.

Based on material developed from some 50 selected companies that have already inaugurated postwar planning programs, the survey has uncovered two distinct types of thinking. In some cases, it is believed that in order to make the planning assignment definite and to assure quick results, the scope of postwar planning should be arbitrarily limited—generally to the fields of product development and market research. On the other hand, a number of companies look upon postwar planning as an opportunity to analyze and appraise all phases of the company's operations in terms of estimated postwar conditions. The scope of such activities is virtually unlimited.

A copy of this report is available to executives who request it on their business stationery, Address: Policyholders Service Bureau, Metropolitan Life Insurance Company, One Madison avenue, New York 10, N. Y.


MARCHING
ALONG
WITH
IMPCO



Rope and Cordage, from earliest days, have been made from various fibrous substances — flax, hemp, jute, cotton and linen. Rope was essential particularly to maritime New England. A first class frigate of Revolutionary days required over forty miles of cordage weighing over seventy-five tons.

In principle, rope was made like other yarn, by spinning and twisting. This is one of the first steps also in the manufacture of papermakers' felts. The excellence of the woven felt depends upon the carefully controlled process of spinning and twisting the yarn.

This step, like every other in the sequence of the weavers' operations, has become a precision job at CANTON, where dependability is woven into each and every **DRAPER FELT**

Draper Felts Favor Efficiency

DRAPER BROTHERS COMPANY

Woolen Manufacturers Since 1856

CANTON, MASS.

OUR REPRESENTATIVES *to serve you*

L. H. BREYFOGLE, Kalamazoo, Mich.

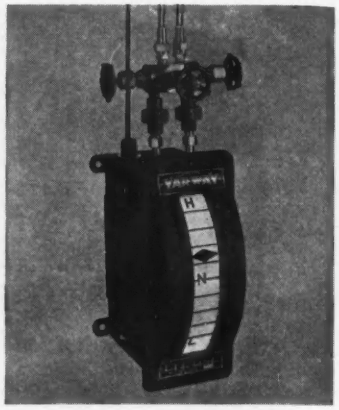
W. L. CAMPBELL, Savannah, Ga.

RALPH E. BRIGGS, Canton, Mass.

E. R. LELOFF, Vancouver, Wash.

New Yarnall Indicator

The Yarnall-Waring Company, Philadelphia, Pa., is offering a complete new bulletin on the application and operating advantages of their recently announced Yarway Remote Water Level Indicator. This is a device which brings boiler water levels down to eye level reading on a



WATER LEVEL INDICATOR

brilliantly illuminated, two-color scale mounted on the plant's instrument panel or other convenient location. Profusely illustrated and with a detailed description of the unique mechanism and methods of installation, this bulletin also shows the instrument in use in the boiler rooms of leading utilities, industrial plants and institutions. Bulletin No. WG 1820 should be requested.

Manhattan Products

Printing of the Golden Anniversary Edition of "Manhattan Rubber Products for Industry," a 140 page catalog of industrial rubber goods, has been completed by The Manhattan Rubber Manufacturing Division of Raybestos-Manhattan, Inc., Passaic, N. J. Copies are available on request.

Described in this new catalog are hundreds of mechanical rubber products and many other special items manufactured by Manhattan, many available only for Post-War use. Particular emphasis is given belts, hose, molded goods, packing, lathe cut and extruded rubber goods, friction material, rubber covering and abrasive wheels. Also contained in the catalog is a brief history of the company and special sections devoted to the three fundamentals of Manhattan and Condor Products, namely, "Flexlastics", "Strength Members" and "Manufacture and Design". Engineering data on belting and hose is included.

. . . *divided we fall!*

A THOUSAND devils beset the buyer-seller relationship today . . . restrictions, allocations, shortages, delays . . . but we must not, we cannot lose our grip.

The delicate equilibrium of American enterprise, during these troublesome times, lies in our grasp. If we fail now, all is lost . . . the value of past relationships and the opportunity of quick post-war adjustments.

Only tolerance and understanding can hold the tie that promises re-employment to our boys overseas. It takes a *WILL* to hold on . . . *GOODWILL!* Will you lend a helping hand?

NATIONAL STARCH PRODUCTS
INCORPORATED
270 MADISON AVENUE, NEW YORK 16, N. Y.
CHICAGO — PHILADELPHIA — BOSTON — INDIANAPOLIS — SAN FRANCISCO

Digester Castings Are "*Standing Up 100%*" After Two Years in Corrosive Service

Corrosion is especially pernicious in the sulfite digestion process because of the excess of sulphur dioxide in the solution employed, and has caused high mortality of ordinary iron or steel parts.

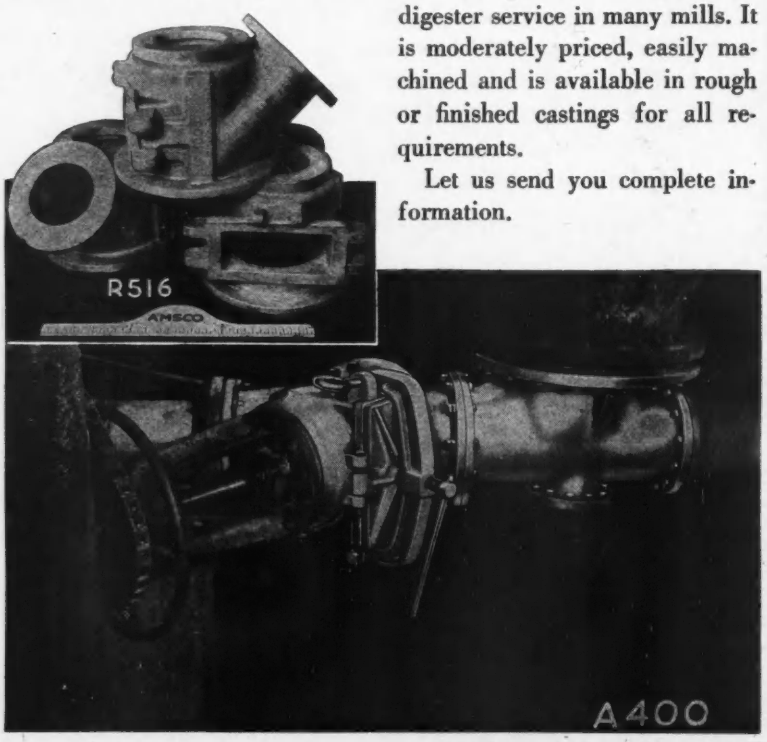
Today excessive replacement costs are no longer accepted as a necessary evil by digester operators. In one mill, digester parts which had repeatedly failed were replaced by castings made of Amsco Alloy F-12, a chromium-nickel alloy highly resistant to corrosion. This metal also has ductility to reduce the incidence of fracture from load carrying, compression and other stresses.

Picture A-400 shows some of the Amsco Alloy castings in the mill referred to. The large casting below the digester cone handles the sulfite sludge, which is severely corrosive; and, to the left, is a blow-off valve. Picture R-516 shows blow-off valve bodies ready for shipment. Other F-12 Alloy castings in the same digester include steam nozzles, valve discs, sleeves, wedges, seat rings, gauge glass plugs and fittings.

Recently an official of the paper company wrote: *"The Amsco Alloy castings were made two years ago and, as previously stated, they are standing up 100%."*

Amsco Alloy F-12—the sulfite paper mills' own alloy — conforms to T.A.P.P.I. specifications and has proved economical in digester service in many mills. It is moderately priced, easily machined and is available in rough or finished castings for all requirements.

Let us send you complete information.



Amsco
AMERICAN MANGANESE STEEL DIVISION
Chicago Heights, Illinois
AMERICAN Brake Shoe COMPANY
FOUNDRIES AT CHICAGO HEIGHTS, ILL.; NEW CASTLE, DEL.; DENVER, COLO.; OAKLAND, CALIF.; LOS ANGELES, CALIF.; ST. LOUIS, MO.
OFFICES IN PRINCIPAL CITIES

Sonoco Gets Army-Navy E

On November 4, in an impressive ceremony in the main corridor of the huge cone plant at Hartsville, S. C., Sonoco Products employees were awarded the official "Army-Navy Production Award for great accomplishment in the production of materials needed in the war effort." Nearly 2,000 employees were assembled in the cone plant building to witness the program, with John H. Martin, general production manager, master of ceremonies.

Presentation of the award and "E" pennant was made by Colonel C. W. Woodward, commanding officer of the Charlotte Quartermaster Depot, Charlotte, N. C., James L. Coker, president of Sonoco Products Company, accepting for the company.

Following, Lt. W. C. Boyd, Liaison Officer, S.C. Selective Service Board, Columbia, S. C., made the presentation of the Army-Navy "E" pins to employees' representative, Aaron Tyner, who has been with Sonoco since 1899.

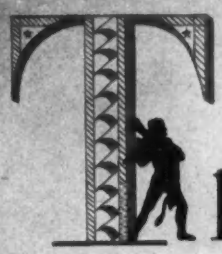
Music was furnished by the Shaw Field Band and the entire ceremony was broadcast over stations WOLS, Florence, S. C., and WFIG, Sumter, S. C.

Since the beginning of the war Sonoco Products have grown and developed in their importance to the armed forces until today they are making a long list of highly specialized items for many branches of the services . . . not only in paper products, but their highly developed machine shop facilities have been extensively employed on precision metal working.

This special war production, together with their textile products, is conservatively estimated as placing 90% of their production essential to the war effort.

Valdura Paints

The well-known Valdura line of heavy duty industrial maintenance paints is now listed in the new catalog just issued by the American-Marietta Company, 43 E. Ohio street, Chicago. Fully illustrated, the catalog provides application suggestions, product descriptions and technical data in complete detail. Attractively printed in two colors, it is easily handled and filed. The Maintenance man or purchasing agent can plan his paint requirements and know the characteristics of drying, coverage and application by using this handy ordering catalog.



The source of finer paper-making chemicals . . . since nineteen hundred and seven . . . . .

PAPERMAKERS CHEMICAL DEPARTMENT

HERCULES POWDER COMPANY

INCORPORATED

WILMINGTON, DELAWARE

Boston, Mass. Holyoke, Mass. Albany, N. Y. New York, N. Y. Atlanta, Ga. Savannah, Ga.
Jacksonville, Fla. Marrero, La. Detroit, Mich. Kalamazoo, Mich. Milwaukee, Wis. Chicago, Ill.
Portland, Ore. San Francisco, Calif. Freeman, Ont. (Hercules Powder Co., Canada, Ltd.)

SUPERIOR PMC CHEMICALS

Johnson Joints on Calenders at Schmidt Lithograph Co., San Francisco, and Eddy Paper Co., Three Rivers, Mich.

For calender service they MUST be good

IT takes the tough jobs to show how completely Johnson Joints have outmoded the old stuffing box type of steam fits.

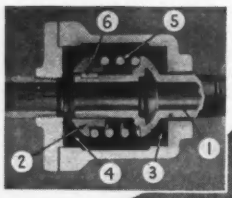
Their outstanding record on calender service is a good example. With the old style stuffing boxes, the lateral shifting of heavy calender rolls causes life-shortening wear of packing and parts—calls for frequent repacking and replacement. But with the Johnson Joint this lateral misalignment is *absorbed*, without any loss of operating efficiency. An annular space between the nipple and the housing allows the roll to shift in any direction—without impairing the seal—without causing any uneven wear.

This self-aligning feature is only one of the many reasons why more than a hundred paper mills have purchased 50 or more Johnson Joints—why more than fifty mills have purchased from 100 to as many as 800. Its packless, self-oiling, self-adjusting design ends *all* steam fit troubles—cuts maintenance cost—saves valuable production time—offers a simpler, neater way to provide for syphon drainage of rolls.

For Calenders, Paper Machines and Corrugators

Nipple (1), fastened to roll. Sliding collar (2), keyed (6) to nipple. Carbon graphite seal ring (3) and bearing ring (4), which eliminate packing and oiling. Spring (5) is for initial seating only; in operation joint is pressure sealed.

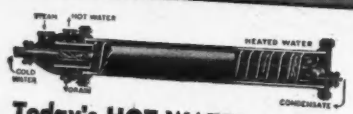
Write for new bulletin



They *must* be good. Over 50,000

JOHNSON *Rotary Pressure* JOINTS

installed in less than ten years



Today's HOT WATER Answer

The simplest, quickest, most economical way to heat water with steam is with the Johnson "Instant" Water Heater. Hook it right up to your high pressure steam line—needs no reducers. Simple, rugged design assures long life. Available *right* now in new all steel, lower cost construction, in complete range of sizes and capacities.

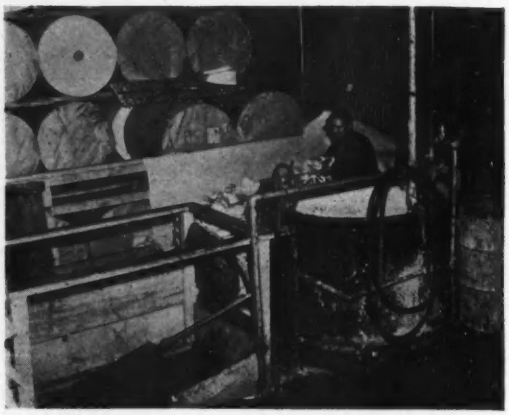
Write for Bulletin

The Johnson Corporation

828 WOOD STREET THREE RIVERS, MICH.

Hydrapulper Salvages Cellophane

A small Dilts hydrapulper has been installed at the plant of the Oswego Falls Corporation at Fulton, N. Y. for salvaging cellophane lined waste materials from its Sealright division. Because of the contamination of the cellophane in this waste it has been necessary in the past to burn it; and with the installation



AN INSTALLATION AT OSWEGO FALLS MILL

of the hydrapulper between three and four tons of a combination of sulphite and ground wood pulp is being reclaimed.

The installation at the Oswego Falls Corporation consists of a small 4 foot diameter hydrapulper arranged with continuous extraction through 3/8 inch diameter holes, and the extracted stock is diluted and passed over a small Shartle selectrap where additional cellophane is removed and the recovered fibers passed on to a wet machine and taken off in laps for reuse in the paper mill. The Sealright cellophane lined waste is accumulated and run through the hydrapulper system during the eight hours that the ground wood mill is shut down and one of the ground wood wet machines is used during the eight-hour shift in this pulp recovery operation.

Philadelphia Paper Men Meet

[FROM OUR REGULAR CORRESPONDENT]

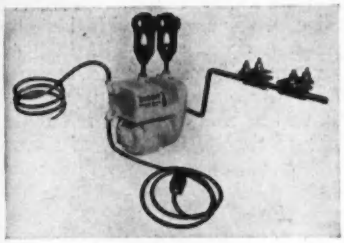
PHILADELPHIA, Pa., November 22, 1943.—Sidney Ferguson, president of Mead Corporation and Dill & Collins, addressed approximately 200 members of the Philadelphia Paper and Cordage Association, at their monthly luncheon on Friday last in Arcadia Restaurant. George Corse, president of the association, presided. Seated at the speakers' table were Mr. Ferguson, William Kettra, general purchasing agent for Mead Corporation; F. W. Roberts, Ketterlinus Lithographic Company and M. G. Benson, general manager, Dill & Collins.

Mr. Ferguson explained that he was pinch-hitting for George H. Mead, chairman of the Board of Mead Corporation, and a member of the War Labor Board and the President's Business Advisory Committee, who was scheduled to speak but was prevented from doing so because of activities of the War Labor Board in Washington.

Mr. Ferguson drew a word picture of conditions as they are today, contrasting them with conditions as they were during the first World War. His address was interesting and instructive and was favorably received.

Budgit Bridge Drive

The "Budgit Products Division" of Manning, Maxwell & Moore, Inc., Muskegon, Mich., are placing on the market under the trade name of the "Budgit Bridge Drive" a new, complete, self-contained unit to convert the bridge travel motion of hand operated cranes to electric drive. Nothing like it has been available heretofore. Patents to cover the unit and application are pending. The outstanding feature is that the necessity for doing any machine work, drilling or fitting, to apply the unit has been eliminated entirely. It may be installed on a crane in an hour. The only tool required to apply it is a wrench.



SHOWING COMPLETE UNIT

It is suitable to convert hand operated cranes of either the single or double girder type of any make hand operated crane of 10 tons or smaller capacity, providing the crane is of the geared type and operated by a chain wheel of 24 inches or smaller diameter.

When applied to a crane the unit provides smooth starting, rapid acceleration and electric travel at a walking speed. Controlled by a push button, hanging to within easy reach of the ground, control is also effortless and under complete control of the operator.

Cranes equipped with this bridge drive may be "inched" along the runway accordingly, spotted over loads and quickly reversed without undue vibration or shock, because an entirely new principal to absorb the initial torque of the motor is employed. Literature completely describing the unit and its applications is available and will be supplied to interested parties on request.

Lift Truck Guide

An aid to both new and experienced lift truck operators is the "Lift Truck Operators Guide" published by Towmotor Corporation, Cleveland, and offered free on request.

The Towmotor booklet interprets to industrial truck operators the importance of the materials handling function and emphasizes the increasing variety of tasks that are being given lift trucks in present day handling systems. It points up the need for top efficiency in truck operation in line with today's higher production goals.

While Towmotors are not difficult to operate, their flexibility permits many "tricks of the trade," and their adaptability to moving many different types of materials makes valuable a knowledge of *all* the basic methods of lift truck operation. The booklet is therefore designed to increase the skill of both veteran operators and new men. Special attention is given to fast, efficient maneuvering as well as safe and time saving operating methods.

Other sections of the 24-page booklet emphasize by simple illustrations typical load-carrying devices and methods of stacking. Safe, space-saving methods of building unit loads are clearly and quickly shown in pictorial form. There is also a check list of "Do's and Dont's" for safety as well as one covering operating care of the lift truck.

Copies of this booklet may be had without charge from Towmotor Corporation, 1226 East 152nd street, Cleveland 10, Ohio.

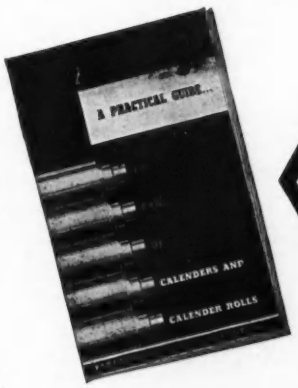
In Regrinding Calender Rolls

WHY IS IT IMPORTANT TO FIGURE THE CROWN SHAPE CORRECTLY?

Sometimes not enough care is taken to obtain the correct shape when crowning the bottom roll, and then there is difficulty in obtaining a good sheet on the calender. If the bottom and next-to-bottom rolls are ground with the curve off center, the next-to-bottom roll will crowd so hard that the chafing rings will wear out very rapidly and one end of the roll will become very hot, causing expansion at this end and pinching of the paper.

If the rolls are concaved, the ends will contact when there is no paper in the stack, eventually pieces will flake out (spall), and once the rolls start flaking they will continue to do so until they are reground.

Hints on computing deflection of bottom rolls, figuring and checking amount and shape of crown and regrinding crowned rolls are given in the new 32-page booklet, "A PRACTICAL GUIDE TO CARE OF CALENDERS AND CALENDER ROLLS." Write for a copy today. No charge, no obligation.



FARREL-BIRMINGHAM CO., Inc.
ANSONIA, CONN. - Dept. 11A

Please send me a copy of your new booklet on the care of calenders and calender rolls.

Name.....
Title.....
Company.....
Address.....
City..... State.....

FARREL-BIRMINGHAM COMPANY, INC.
ANSONIA, CONN.
Plants: Ansonia and Derby, Conn., Buffalo, N. Y. — Branch Offices: New York, Buffalo, Pittsburgh, Akron, Los Angeles

PAPER MAKING AND CONTROL IN AUSTRALIA

(Continued from page 59)

require the sale to any designated purchaser of stocks of paper or goods processed from paper at prices determined by the Prices Commissioner (Australian equivalent of the Office of Price Administration).

Newsprint control, too, was instituted on February 27, 1941 with the establishment of the National Security (Metal Foil and Paper) Regulations. General prohibitions were as follows:

1. No newspaper, magazine, or periodical could be printed or published unless it was being printed or published immediately prior to the enactment of these regulations.
2. No newspaper, magazine or periodical could be published at more frequent intervals than those at which it was being issued immediately before the enactment of these regulations.
3. No inserts or supplements could be printed except on authorization from the Minister.
4. No trade catalogue or advertising pamphlet could be printed without permission of the Minister.

The first order restricting the use of paper for newsprint was issued June 30, 1941; it provided that no newspaper could use more newsprint in weight than one-fourth of the amount used during the base year, July 1, 1938 to June 30, 1939. This quantity was subject to a further reduction in the form of a percentage based on the average number of broadsheets the newspaper contained during the base year. This type of restriction was continued until April 1, 1942. Since it had become necessary to make further cuts, newsprint was then placed on a rationed basis, under the supervision of the various Collectors of Customs in the capital cities; this resulted in a further cut of approximately 20%. The latest regulation of the use of paper for newspapers is Order No. 35, June 30, 1943 which continues the rationed control of newsprint administered by the Collectors of Customs.

Newsprint Pool

Actually the distribution of newsprint to publishers is the responsibility of the voluntary newsprint pool under the control of the Customs Department. 10,000 tons of newsprint have been distributed within the percentage allotments of the Collector of Customs—6,000 tons from Tasmanian mills and 4,000 from reserve stocks of individual newspapers. Within the restrictions imposed which limit the newspapers to 20% of their pre-war tonnage of newsprint, the Australian newspapers have continued publication. The Chairman of the Voluntary Newsprint Pool is the Comptroller-General of Customs; the committee administering the pool includes representatives of the metropolitan dailies and of provincial and country daily and weekly newspapers. All prices are under the control of the Commissioner of Prices, and all transactions are carried on under license from the Department of Trade and Customs. Appeals from newspapers for increased allotments are referred by the Minister of Trade and Customs to the newsprint pool.

Book and Periodical Publishing

In addition to the newspapers, the book and periodical publishing industries have also experienced difficulties because of the shortage of paper. Government priorities for paper have cut sharply into the available supply. An order (July 1943) reduces the amount of paper for use by periodicals, except for those specifically exempted, to 50% of the amount used for the year 1938-39. A Book Publication Committee which has been investigating the book shortage has recommended, among other suggestions, an increased local output of paper for books.

Although there is not sufficient paper in Australia to answer the needs of all the consuming industries, the increase in paper manufacture has been quite remarkable. Local pulp production and the use of waste have reduced imports of pulp to approximately one-fourth of requirements. If the newsprint industry expands to a size commensurate with the supply of available raw materials, about 100,000 to 120,000 tons of paper can be produced yearly—approximately four times the present output of the Boyer mill. Australia will be well equipped to supply a substantial percentage of the 160,000 tons of newsprint a year which represents her consumption during the last pre-war years.

Sanitary Tissue Papers

The Tissue Association, Ross A. Fife, executive secretary, 122 East 42nd Street, New York, has issued a publication under the title of "Sanitary Tissue Papers," dealing with the essentiality of these papers in the wartime economy.

The information was compiled for the convenience of the War Agencies. It includes production data and summarizes the wide utility of the sanitary line, such as toilet paper, sanitary absorbent or facial tissue, household and industrial paper towels. A brief discussion of each type of sanitary tissue is included and a summary of the investigation of tissues utilized by specialists in the medical profession, by Dr. Gordon W. Petersen, is given. The concluding chapter discusses the place of paper napkins in the war economy.

Copies of the book are available to paper manufacturers and paper merchants at a nominal price, through the association.

Motoreducer Bulletin

To simplify the selection of correct gearmotor units for specific applications, the Falk Corporation of Milwaukee has published a new Motoreducer Bulletin No. 3100. The bulletin is set up in conformance with Standard Practice of the American Gear Manufacturers Association which allows for three distinct classes of units dependent upon various service factors.

Methods of selection, selection tables, and complete dimensions for every size and type of unit are other features that make this 64-page bulletin a valuable reference for industrial engineers, designers, and purchasers of machinery. A free copy will be mailed to those requesting it on their company letterhead. Write direct to The Falk Corporation, 3001 W. Canal street, Milwaukee 8, Wis.

UFORMITE 466

...A NEW TOOL FOR THE PAPER MAKER

UFORMITE 466, a urea formaldehyde resin introduced only a short time ago, is already filling an important wartime role in the paper industry. Primarily designed to be added at the beater to produce a sheet of high wet strength, UFORMITE 466 is now proving valuable in many diverse applications.

UFORMITE 466 is easy to use. It is supplied as a 50% aqueous solution which is then diluted with water to 10-20% solids and added to the beater, head box, fan pump, or other point which is most accessible. The resin is best retained by the fibre in the presence of stock containing the usual amounts of alum. If alum is not included in the furnish, it is possible to achieve almost the same efficiency by the use of an acid. It is not necessary to resort to corrosion conditions to obtain effective retention of UFORMITE 466. UFORMITE 466 does not seem to affect stock freeness. Heat of the drier section is ordinarily sufficient to cure the resin.

In the table below, taken from laboratory data which have been verified in commercial application, the improvement in dry tensile as well as other qualities is markedly apparent. Complete data on the use of this new urea formaldehyde resin for the paper field are available now. Write today for full details about UFORMITE 466.

3 Awards to The Resinous Products & Chemical Company and its associated firms, Rohm & Haas Company and Charles Lennig & Co.

EFFECT OF UFORMITE 466 ON TYPICAL WATERLEAF SHEET

PER CENT UFORMITE 466 IN STOCK	[1]TENSILE		[2]MULLEN		[3]TEAR	
	Dry	*Wet*	*Dry*	*Wet*	*Dry*	*Wet*
None	1250	32	51	0	97	45
1%	2100	360	63	18	79	105
2½%	2770	512	68	25	77	134
5%	3160	740	84	38	74	168

[1]Grams per ½ in. strip. [2]lbs. per sq. in. [3]Elmendorf Tester.

THE UFORMITES FOR PAPER TREATMENT

UFORMITE 430 and UFORMITE 500 for resin fortified glues for the manufacture of weatherproof corrugated and solid fibreboard.

UFORMITE 466 urea formaldehyde type resin for increasing wet strength at moderate cost.

UFORMITE 499 for improving wet strength of paper, through tub sizing operations.

UFORMITE 412-A, a urea formaldehyde type for laminating.

THE RESINOUS PRODUCTS & CHEMICAL COMPANY

WASHINGTON SQUARE, PHILADELPHIA, PA.

Deep Cut in Newsprint Use Forecast

WASHINGTON, D. C., Nov 24, 1943—Cuts in newsprint usage of nearly 30% for some of the larger newspapers of the country in 1944 are forecast in a recommendation made today by the Newspaper Industry Advisory Committee, Harry M. Bitner, Director of the War Production Board Printing and Publishing Division, announced.

Ending a two-day session, the Advisory Committee recommended that newspaper publishers take a cut of 23% in the first quarter of 1944 to meet the decline in newsprint production. This decision was in the form of a resolution to the effect that the sliding scale adopted by the Committee at its October 19 meeting, be used by the WPB Printing and Publishing Division as a yardstick to accomplish the 23% reduction in usage of paper in the first quarter of 1944, as compared with the first quarter of 1941. Actually the cuts will range from nothing for some of the smaller newspapers to as high as 28% for some of the larger papers, but the over-all reduction recommended will amount to 23%.

These contemplated savings in newsprint approximate 194,000 tons. The Committee volunteered to devote its best efforts to the end that newsprint consumption be limited to the available supply during 1944.

The newspaper publishers also advised government Presiding Officer Bitner, that it recommended a new quota basis for 1944 allowing an increase in use of newsprint based on the percentage gained in net paid circulation of the fourth quarter of 1942 over the fourth quarter usage in 1941. Other resolutions were passed in appreciation of the services of Harold Boeschenstein, of the War Production Board, for his efforts to secure for the American Press an adequate supply of newsprint, and in appreciation for the services of William G. Chandler, former Director of the Printing and Publishing Division; Mr. Bitner, the present Director; Matthew G. Sullivan, Newsprint Administrator, and Carroll Hanson, Newspaper Consultant of the Printing and Publishing Division.

Another resolution recommended that any saving of print paper effected in a quarter of 1944 be carried over for use in any following quarter. The Committee adjourned to meet next January on the call of the Government Presiding Officer.

The text of the quota resolution follows: "That the October 19th action of this committee recommending that 1944 allowable use be based upon 1943 allowable use or quota, whichever is the larger, be rescinded, and be it further resolved,

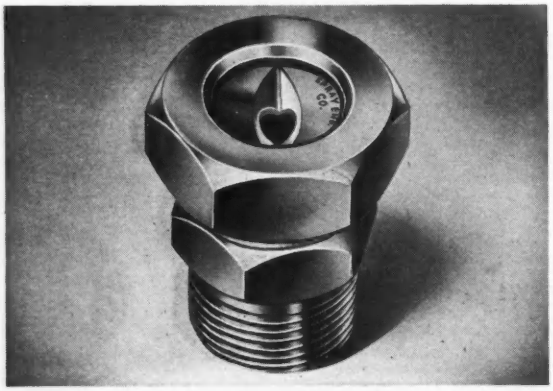
"That the quarterly base quota of each newspaper, commencing in the year 1944, shall be 100% of the amount of paper used in printing its net paid circulation in the corresponding quarter of 1941, plus 3% for waste, plus the percentage of increase of its net paid circulation of the fourth quarter of 1942 over the fourth quarter of 1941. From this base, deductions shall be made to conform with the available supply of print paper."

Mr. Boeschenstein told the committee that, based on the present inventory position, both with respect to newsprint and wood pulp in Canada and the United States, as well as on current wood production, WPB considers it unwise to count on more than a total supply of newsprint approximating 225,000 tons a month, which must cover all uses.

SPRACO NOZZLES

PAPER MILL SERIES NO. 1

The Flat Spray Type



Spraco engineers have for many years constantly worked on the development of nozzles of various types for specialized use in the paper industry. We take pleasure in presenting the first in a series of proven applications.

FOURDRINIER WIRE WASHING

Spraco engineers have developed specifications for washing Fourdrinier wire, using header arrangements of flat spray nozzles. Blueprints are available giving recommended layouts and spacing of nozzles. Send your problem to us.

SPRAY ENGINEERING CO., 118 CENTRAL ST., SOMERVILLE, MASS.

FINANCIAL NEWS

New York Stock Exchange

High, Low and Last for Week Ending November 20, 1943

STOCKS

	High	Low	Last
A. P. W.	2½	2	2
Armstrong Cork Co.	37	35¼	37
Celotex Corp.	11⅛	10¾	10⅞
Celotex Corp., pf.	18	17¾	18
Certain-Teed Products, Corp.	5⅛	4¾	5⅛
Certain-Teed Products, Corp., pf.	64	58	63
Champion Paper & Fibre Co.	20	19⅜	19⅜
Champion Paper & Fibre Co., pf.	107½	106⅜	107½
Congoleum Nairn Co.	21¾	20¾	21½
Container Corp. of America	19⅞	19½	19⅞
Continental-Diamond Fibre Co.	11	10½	11
Crown Zellerbach Co.	15⅛	14⅜	14⅞
Crown Zellerbach Co., pf.	96¼	95	95⅝
Dixie Cup Co.	14¾	14	14¾
Dixie Cup Co.,—A.	44	43¼	43¾
Flintkote Co.	19	17⅞	18
Flintkote Co., pf.	106¾	105	106½
Robert Gair	3⅛	2¾	3
Robert Gair, pf.	13⅛	12	12½
International Paper Co.	12⅞	12	12¾
International Paper Co., pf.	66¼	62¾	66¼
Johns-Manville Corp.	85	81	84¼
Johns-Manville Corp., pf.	129¼	128½	128½
Kimberly-Clark Corp.	29½	29	29
MacAndrews & Forbes	25¾	25⅛	25⅛
MacAndrews & Forbes, pf.	138	138	138
Masonite Corp.	37	36½	37
Mead Corp.	7½	7¼	7½
Mead Corp., pf. A-6%	83	80	83
Mead Corp., pf. B-5½%	70	69¾	70
National Container Corp	12¼	11¾	11¾
Paraffine Companies, Inc.	43	41½	42
Paraffine Companies, Inc., pf.	....	....	....
Rayonier, Inc.	13¾	12¾	13¾
Rayonier, Inc., pf.	30⅜	30	30
Ruberoid Co.	24½	24	24
Scott Paper Co.	38¾	38	38¾
Scott Paper Co., pf.	110	110	110
Sutherland Paper Co.	28½	28½	28½
Union Bag & Paper Corp.	9¾	8¾	9⅝
United Paperboard Co.	3⅛	3½	3½
U. S. Gypsum Co.	71	68	70½
U. S. Gypsum Co., pf.	177½	177¼	177½
West Virginia Pulp & Paper Co.	15½	15⅛	15½
West Virginia Pulp & Paper Co., pf.	106¼	106	106

BONDS

Abitibi Pulp & Paper Co., 5s '53	....	....	....
Celotex Corp. 3¾s '55	101¼	100¾	101¼
Certain-Teed Products Corp. 5½s '48	100½	100⅛	100½
Champion Paper & Fibre Co. 4¾s '50	....	....	....
International Paper Co. 6s '55	107	106½	106½
International Paper Co. 5s '47	104½	104	104¼
Mead Corp. 3½s '53	....	....	....
West Virginia Pulp & Paper Co. 3s '54	....	....	....

New York Curb Exchange

High, Low and Last for Week Ending November 20, 1943

STOCKS

	High	Low	Last
American Box Board Co.	....	....	....
Brown Co., pf.	....	....	....
Great Northern Paper Co.	31¼	30¾	31¼
Hummel-Ross Fibre Corp.	3⅞	3⅝	3⅞
St. Regis Paper Co.	3⅝	2¾	3⅛
St. Regis Paper Co., pf.	134	133½	133½
Taggart Corp.	4½	4¼	4½

BONDS

American Writing Paper Co. 6s '61	97	97	97

West Virginia Votes Dividend

West Virginia Pulp and Paper Company has declared a dividend of 15 cents, payable January 3 to stock of record December 15. Previous payment was 50 cents on October 28.

Gaylord Corp. Declares Dividend

Gaylord Container Corporation declared an extra dividend of 12½ cents and the quarterly of 12½ cents, both payable December 15 to stock of record November 30.

Johns-Manville Votes Dividend

Johns-Manville Corporation has declared a year-end dividend of 75 cents, payable December 24 to stock of record December 10.

A MESSAGE

ON

DE-INKING

WITH

"K-C-2"

●

Waste Paper today is of lower grade and not as uniform as in normal times.

If a relatively small amount of K-C-2 is added to the alkalies used in de-inking, it is helpful in maintaining the quality of finished stock.

K-C-2 prevents yellowing, makes stock brighter and cuts bleach demand.

K-C-2 has been found of real value to paper mills using it.

Write us for procedure formulae for De-inking ground wood stock such as newsprint. The cost is low and the stock has the approximate color and quality of new ground wood.

●

THE KINSLEY CHEMICAL CO.

12500 Berea Road

CLEVELAND, 11, OHIO

PAPER
TRADE JOURNAL
Title Reg. U. S. Pat. Off
Henry J. Berger
EDITOR

Vol. 117 November 25, 1943 No. 22

POLITICS AND INDUSTRY

Political influences are having such a marked effect upon industry that many believe that more business men should enter political life. Many business men have, for not all congressmen and senators, governors and mayors are lawyers and some lawyers are eminently good business men. This particular suggestion seems to come from a misconception. In theory, politics and industry may appear like two entities. Some people even talk as if they were entirely separate, the one from the other. A moment's thought should dispel this view as a form of isolated thinking, since politics forms the basic foundation of our government. Activities of the government are essentially political and politics affects industry as it does everything in which the influence of government is felt.

When President Roosevelt suggested that politics be abandoned for the duration of the war, the reaction scarcely came up to expectations. How could it? If the President's advice had been followed and "stop playing politics" had been adopted, the democratic form of our government must have ceased to function and a dictatorship would have been created. But nothing like a one-man government would be likely to occur even if this idea had been acceptable. Dictatorships are only possible when a government becomes too weak to effectively satisfy its citizens. From the time of Pericles, who represented the people in the two-party system of government at Athens, in ancient Greece, demagogues have arisen to establish the peculiar types of government they wish to impose upon the people, primarily undertaken, of course, to enable them to gain great wealth and power.

But what the President doubtless meant was that sectional politics should be properly subordinated in the common cause of greater unity in furthering the progress of the war. Now there are standards applicable to politics as in every act or product, and the standards in politics today are that which the people tolerate even if a minority disapprove. If the political standards seem at a relatively low level, they must be raised by the voters and will be when enough intelligent votes are cast. In the expressed opinions of many citizens there is a need for more constructive political activity rather than a limitation of it—for a vigorous two-party system, or perhaps a third party, to attract the attention of millions of citizens who view the Washington scene as a kind of dull legislative motion picture.

Industry has been more deeply affected by the political philosophy and policies of the present Administration than by any of its predecessors. The many innovations introduced by the admixture of social objectives with economics, has created a novel form of national policy in what is commonly called the New Deal. Unfortunately, it seems too much has been attempted too soon. Some reforms doubtless were desirable, even necessary, but gradual changes would appear to serve the best interests of the country. A considerable class consciousness has been created and lack of unity is particularly apparent in the relationship between organized labor and the government agency—the War Labor Board. Strikes have occurred in the past, but more labor disturbances have taken place within the past few years than should have occurred.

The "hold the line" order, which chiefly concerned the firm establishment of the "Little Steel" decision, has been vigorously opposed by organized labor. Consequently the coal supply situation has become so grave that an adequate supply of fuel for essential industries seems no longer assured. Although this directive was put up as a barrier to stop "creeping" inflation, its effectiveness is seriously doubted. Although the United States is now supposed to function under a controlled economy, this attempt to check rising wages, while the cost of living is uncontrolled but partially, is not very successful. In the case of coal, the miners have gained an increase in wages, the country has lost millions of tons of the fuel and no satisfactory settlement of the dispute has been reached.

A government controlled economy is one of those projects which evidently appear close to perfection on paper, perhaps a major factor to provide "a more abundant life," but which the human element appears to oppose so strongly when the theory is applied that the laws of supply and demand makes the economic control of little value. It has been stated within Administration circles that government control must be continued after the war; that the release of such brakes checking inflation as the Office of Price Administration, should be continued. It seems doubtful if the public will react favorably for the continuance of any bureau of the national government which has created, just or unjustly, such adverse criticism as has the OPA.

The future of the paper industry seems assured under any reasonable control system. The utility of paper has been extensively developed during the war. Even without this incentive the industry has steadily expanded. Not only has the industry built more mills and better mills but new and more efficient machinery,

new processing methods and new products from paper and pulp, as well as numerous by-products have been produced. If private enterprise is to continue to expand, less government regulation and expenditure and more good government must provide the opportunity.

Brown Co. to Pay Bond Interest

On December 1, 1943, the Brown Company, Berlin, N. H., manufacturers of pulp, paper and other wood cellulose products, will make its semi-annual payment of interest on its General Mortgage 5% cumulative bonds for the six months ending November 30. Checks will be mailed by the Old Colony Trust Company, paying agent, to all registered owners as of the close of business on November 30, 1943.

This payment is being made out of the 1942 consolidated net earnings of Brown Company computed in accordance with the standby provisions of the General Mortgage indenture. It is the second payment this year, the previous one being on June 1, 1943 at which time the bonds were put on a current basis by the payment of two years back interest as well as that for the six months then due.

Holders of old Brown Company securities which have not been exchanged under the plan of reorganization should forward their securities to the exchange agent, the National Bank of Commerce, Portland.

F. L. Fitts Heads Advance Bag Co.

BOSTON, Mass, November 22, 1943—Robert L. Fitts, formerly vice-president and treasurer of the Advance Bag and Paper Company, Inc., with offices in Boston, has been elected president of the concern succeeding John E. Kelley, resigned.

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1943		Corresponding Weeks—1942	
October 9	91.0	October 10	88.0
October 16	90.5	October 17	89.8
October 23	88.5	October 24	91.6
October 30	89.5	October 31	92.9
November 6	90.6	November 7	88.5
November 13	89.4	November 14	89.7

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July
1942	104.5	103.9	102.9	100.4	95.3	87.4	75.8
1943	87.2	88.9	89.5	88.7	91.4	86.5	84.4

Year	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1942	80.8	82.8	90.6	86.9	80.1	90.4
1943	91.1	88.3	90.2			

COMPARATIVE YEARLY SUMMARIES

	1936	1937	1938	1939	1940	1941	1942	1943
Year to Date	79.5	83.7	71.1	82.0	86.1	96.6	91.9	88.7
Year Average	80.4	79.8	71.5	83.4	85.6	97.4	90.4	

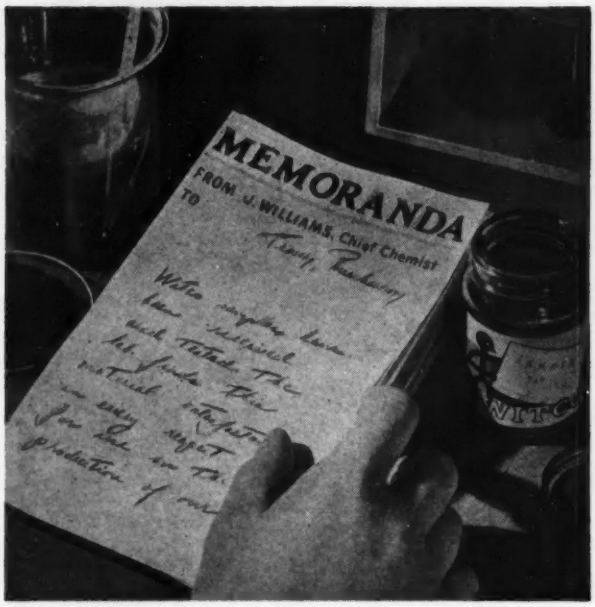
* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

PAPERBOARD OPERATING RATIOS†

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1937	83	89	89	91	88	80	69	77	72	70	57	47	75
1938	56	63	63	60	60	59	59	60	70	73	67	61	64
1939	65	73	76	74	69	73	68	77	82	91	88	77	77
1940	78	75	74	76	82	85	77	79	78	85	82	77	78
1941	81	88	89	89	91	94	92	98	95	99	98	90	92
1942	102	101	101	95	82	72	68	75	76	81	82	77	84
1943	86	88	94	94	96	94	89	96	94	94			

Week ending Oct. 9, 1943—94
Week ending Oct. 16, 1943—95
Week ending Oct. 23, 1943—94
Week ending Oct. 30, 1943—94
Week ending Nov. 6, 1943—93
Week ending Nov. 13, 1943—95

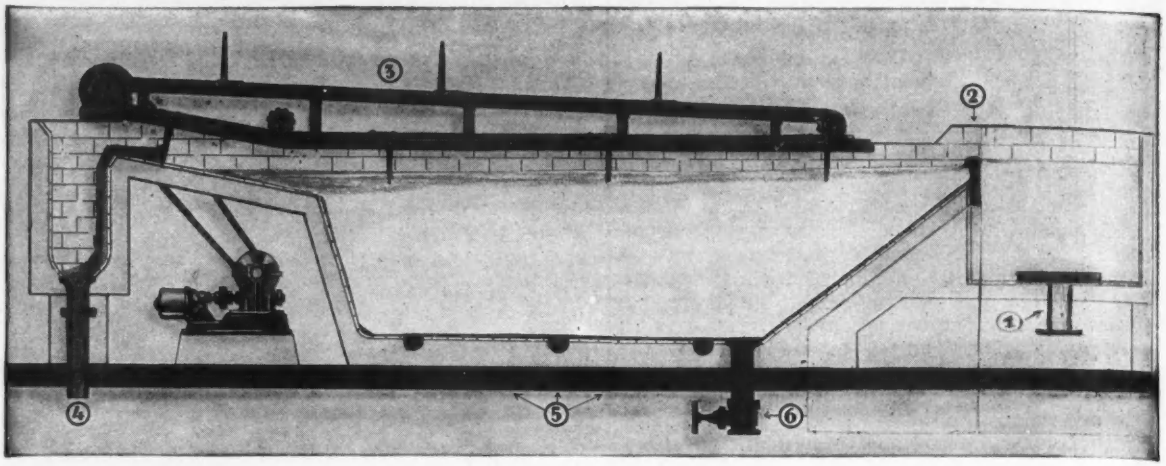
† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Assn.



HAVE YOU TRIED
WITCO CARBON BLACK No. 11?

WITCO CARBON BLACK NO. 11 is a pellet black of the dustless type especially produced for use in paper manufacture. It is more economical for this purpose yet at the same time gives finer, more uniform results because of its special advantages. It is cleaner than the uncompressed black generally used in paper making . . . disperses better . . . and is more easily incorporated into the beater. Take this opportunity to economize and improve the quality of your black papers—write for samples of WITCO CARBON BLACK NO. 11.

WISHNICK-TUMPEER, INC.
Manufacturers and Exporters
New York, 295 Madison Avenue • Boston, 141 Milk Street • Chicago, Tribune Tower • Cleveland, 616 St. Clair Avenue, N.E. • Witco Affiliates: Witco Oil & Gas Company • The Pioneer Asphalt Company • Panhandle Carbon Company • Foreign Office: London, England.



BULKLEY, DUNTON PULP CO., INC. CONSERVES

FUEL

FIBER

WATER

CHEMICALS

through use of the

SVEEN-PEDERSEN FLOTATION SAVEALL

Request list of mills from Technical Dept.

of

BULKLEY, DUNTON PULP CO., INC.

295 Madison Ave. at Forty-first St.,
New York, N. Y.
Tel. Caledonia 5-5260

Section of the
TECHNICAL ASSOCIATION
OF THE PULP & PAPER INDUSTRY
122 E. 42nd St., New York 17, N. Y.
Edited by R. G. Macdonald, Secretary

Paper and Container Conservation and Reclamation In the Navy Department*

By Frederick G. Barber[1]

Abstract

The major efforts of the Navy aiding the paper conservation program are outlined with special reference to the simplification of container design, the reuse of containers, the salvage of paper waste, and the substitution of less critical materials for products containing highly critical pulps.

The Navy Department is seriously concerned with the tight situation of containers of all types and is attempting to aid in the spreading of the supply that is available. There are several broad fields in which the efforts of the Navy have been affected.

Simplification

The simplification of container designs has been given attention in all instances where it has been found practicable through the experience of inspectors at ports of embarkation and through field inspections by personnel sent overseas to the active war fronts. In this field it should be noted that the Navy must constantly be on guard for oversimplification or reduction in use of materials, since too great a degree of conservation in the packing of material may result in the consumption of a great deal of additional packing material, as well as a great waste of the far more valuable item that may be in the container, if damage is incurred. The most critical phase in this connection is the fact that quite often the ultimate destination of most Navy materials cannot be ascertained in advance of packing. Consequently it often becomes necessary to pack all the items to meet the most severe conditions that may be encountered. Every effort is being made within the Navy Department to break down the packing of specific items as completely as possible, so that only the packing materials which are absolutely essential for the shipping conditions and hazards that will be encountered by that particular item are used.

An example of the results being obtained in this field is that, in practically all packing specifications now being issued or revised in the Navy Department, an entirely different type of packing method is specified for domestic shipment than is specified for export. Rather than to pack all items for export, where there is a possibility that only part of the shipment may go overseas, this distinction is now being made. Should it become necessary to ship some of the domestic packed materials overseas unexpectedly, they can then be over-packed, if it is not possible to obtain regular export packed materials to meet a shipping date.

Through observations of some of the personnel recently sent to the active war fronts, it now is possible for the Navy Department to cooperate with the paper box industry in the effort to eliminate the sleeve on V boxes from all but those boxes which will encounter the most severe shipping hazards: in particular those of landing operations and at the most forward bases. These observers also have found that, for most of the shipments now being made in V-1 boxes (made primarily of 100% kraft), V-2 boxes (making a greater use of waste paper), will perform satisfactorily. The results of these observations already are producing savings in the paper box industry.

These specific conservations of critical materials often appear to industry to progress rather slowly, but it must always be remembered that ours is the responsibility of providing adequate containers to supply undamaged goods at practically any point in the world when they are needed by the Navy, the Marines and the Coast Guard.

It is a comparatively easy matter to conduct a series of laboratory tests, and then hazard a guess as to the comparison of those results to actual shipping conditions which vary greatly in their hazards. The other extreme is to take the attitude that nothing is too good for the armed services, and that, whenever a better packing method is devised, it should be used indiscriminately with no regard to the actual packing requirements. A middle course necessarily must be followed, but the greatest difficulty in this course is the determination of the exact requirements of any particular container. In most cases observations of actual shipments are the only conclusive test, and these actual shipments, of necessity, are time consuming. For instance, there still is only a comparatively small number of V boxes in the South Pacific area, even though they have been manufactured in very substantial quantities since the first of this year.

* Presented at the Army and Navy Requirements Conference of the Technical Association of the Pulp and Paper Industry, Palmer House, Chicago, Ill., Sept. 21-24, 1943.

[1] Member TAPPI; Containers Section of the Office of Procurement and Materials, Navy Department, Washington, D. C.

Reuse of Containers

Another field in which the Navy Department is actively engaged is the effort for the conservation of critical materials by the reuse of containers and packing materials. Here the paper box seems to give the most flexibility, because of the ease of opening and the fact that it can be collapsed and bundled for reshipping to the original contractor for reuse. The majority of wooden boxes do not lend themselves readily to reuse by the original contractor, because of the wasteful use of shipping space necessary for their return. However, some worth-while progress is being made in the field of collapsible wood boxes for such items as airplane engines, etc. In addition, the Navy Department is making every effort to see that empty wooden boxes, barrels, crates, etc., are made available to the public in the communities adjoining Navy activities, and in many instances these containers are being put to use to ship items commonly referred to as "less essential than war" materials. This helps to relieve some of the pressure on new boxes of all types.

A typical example of the reuse of containers by the Navy is that the paper boxes used for shipping TNT. Every depot has been instructed to carefully open each box so that the flaps are not destroyed. After the contents have been removed the boxes are flattened and bundled for return to the original contractor. These containers are closed by the use of gummed tape and steel strapping, so that the only deterioration of the box is through wear and tear in shipping. Many of these boxes have made as many as five or six round trips. Those boxes which are stored for long periods in ammunition dumps that are humid and damp obviously do not make as many trips as the ones which encounter more favorable conditions. The depots are further instructed not to discard or destroy these containers even when they are no longer serviceable. Thev are then bundled or baled and sent on their way back to a paperboard mill.

Waste Paper Salvage

This brings us to another field of paper and container conservation in which the Navy is taking an active part. This is the salvage of all available waste paper at the many Navy activities. The Navy has long realized that these activities constitute some of the largest potential waste paper collection centers in this country. Having been advised of the tremendous need for waste paper to augment the present critical supply of pulp which is being aggravated bv the fact that the Navy is exporting from this countrv large amounts of reusable pulp in the form of V boxes, a vigorous campaign to reclaim all usable waste paper has been initiated. In addition to directing each center to save and market all waste paper, a survev of the larger ones is being carried on. The potential quantities and grades are first determined, and the equipment, including sheds, balers, etc., are recommended for the proper handling of the available waste paper.

In one typical instance, a recent survey of a large center showed that approximately 40 to 50 tons per day of waste paper could be collected, the main part of which consisted of old containers. At this center two fair sized buildings have been constructed, each containing a large paper baler. These are now in operation sorting and baling this waste paper, and routing it back to paperboard mills.

Substitution

Another field in which the Navy has been active in conserving pulp and paper is that of being constantly on the alert for instances in which a grade of paper, using less critical types of pulp or other materials might satisfactorily be substituted for one using highly critical pulps. For example, several grades of rag and sulphite mimeograph papers have recently been replaced by groundwood sheets; memorandum pads of 100% chemical wood pulp have been replaced by groundwood grades; No. 3 grade pressboard file folders are now being used in place of No. 2 grade; and lens wiping tissue has been developed that makes unnecessary the use of Japanese hemp or No. 1 manilla rope fiber; and at present, trials are being conducted to determine the possibilities of a temporary or shop blueprint sheet manufactured primarily from waste paper. This latter sheet would be a substitute for the present 50% rag—50% sulphite blueprint sheet.

Cooperates With Conservative Program

In still another field, a great deal of work is being carried on to reduce the number of sizes and styles of containers particularly for packing clothing items.

These are some of the items of importance and serve to demonstrate that the Navy is aware of the conditions within the paper industry and is attempting, insofar as possible, to cooperate with the paper conservation program.

Research and Development

Achievements in war production by the Kimberly-Clark Corporation, Neenah, Wis., are described in a booklet issued by the corporation. It relates an interesting story of the versatility and resourcefulness of paper technicians who have not only developed various types of paper and paper products to meet the demands of the war, but have also produced gun turrets.

The plant formerly producing wallpaper was converted to the production of ordnance equipment in less than six months. More than 1900 parts for the turret of the Maxon power-driven multiple, anti-aircraft gun are manufactured under Kimberly-Clark supervision throughout the country. In recognition of outstanding production the Kimberly-Clark Corporation was presented with the Ordnance Banner in May, 1943.

The corporation's products directly used in the war effort include impregnated creped cellulose wadding and paper, portable delousing bags, collapsible gasoline bags, liners for multi-walled kraft bags and target balloons, camouflage paper, thermo-vests, expendable rain cape and tarpaulin material, impregnated plastic papers, laminated and moulding paper, insulation and other products.

Irving Osborne Heads Board Men

W. Irving Osborne Jr. of the Cornell Wood Products Company, Chicago, was elected president of the National Paperboard Association yesterday at the conclusion of the two-day meeting of the organization at the Waldorf-Astoria Hotel. J. S. Miller of the New England Pulp and Board Company, New Haven, was named vice president, while F. G. Becker was re-elected executive manager, and Harry S. Adler, secretary-treasurer.

Electrical Developments Important for Present and Post-War Planning

By W. R. Harris, Industrial Engr., Westinghouse Electric & Mfg. Co.

As large users of practically all types of the electrical equipment the pulp and paper industry is vitally interested in new electrical developments. These developments are playing an important part in present and post-war planning. Proper application and utilization of them will result in operating economies through better heat and power balances, simplified power distribution, closer motor control, and in many instances fully automatic coordination of drives and processes which will eliminate to a large extent the rather uncertain human element and permit a better and more uniform product.

Heat Balance and Power Generation

Pulp and paper mills require large amounts of both electric power and process steam and the reduction of fuel cost, or the cost of steam and power per ton of paper is of primary importance. In a large number of cases replacement of steam-driven line-shafts with electric drives permits of higher overall plant economies. These savings result from the lower thermal, mechanical, and electrical conversion losses of a large main power house steam unit operating at constant speed in combination with an adjustable speed electric drive, as compared with the higher losses of the smaller individual adjustable speed steam units.

The bleeder type turbine, which extracts mechanical energy from the steam as it expands from the initial pressure to the lower pressures and temperatures for process purposes, has been highly developed. Diversified arrangements of bleeder turbines are installed, including various combinations of single units.

For example, for the best heat and power balance one or more units can take steam at boiler pressure, bleed at 150 lbs. pressure, and exhaust at 50 lbs. pressure, yet operate in parallel with one or more units

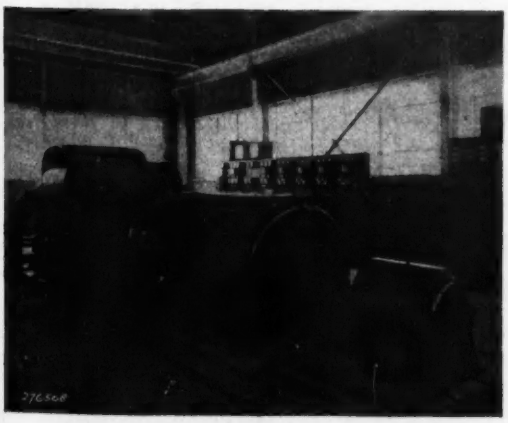


FIG. 1

3500 k.w., Fully Compensated, Double Extraction Condensing Turbo-generator in a New Southern Mill. The Turbine Is Designed for 400 lb. 650 Deg. Steam with Exhaust at 28-Inch Vacuum, and for Automatically Maintained Extraction Pressure of 150 and 50 lbs. The 2300 Volt Metalclad and the 480 Volt Metal-Enclosed Switchgear Are Shown in the Background.

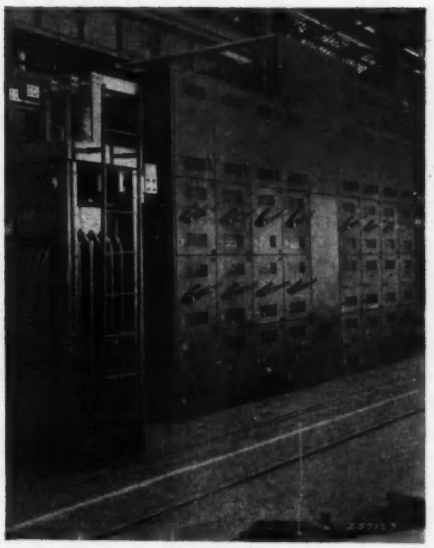


FIG. 2

Modern Metal-Enclosed Low Voltage Air Breaker Switchgear for a Prominent Paper Mill Illustrating the Stafe and Compact Arrangement.

taking steam at boiler pressure, bleeding at 50 lbs. and operating condensing. Double bleeders have also been applied, taking steam at boiler pressure, bleeding at both 150 lbs. and 50 lbs. and operating condensing. Uniform mill frequency and bleeder pressure are now maintained regardless of variations in load and process steam demand, by improved turbine control. Uniform operating conditions throughout the mill improve quality of product and increase mill production.

There appears to be a tendency in the pulp and paper industry toward the installation of larger single generating units. It is interesting to note that many of the new modern mills have little or no standby generator capacity when operated at full production schedule. This tendency is reflected in the older mills when expansion or replacement makes it necessary to install additional generating capacity. This is possible only because of the extreme reliability of the modern turbo-generating equipment. The units are designed with ample factors of safety which permits of long schedules of continuous operation with only periodic inspection during short shutdown periods in the production schedule.

A careful economic study including plant heat balance, electric power facilities, plant layout, and present or future considerations will, in some cases, indicate the use of the smaller adjustable speed turbines which have been especially designed for paper machine operation. The overall performance of these turbines has been greatly improved by the recently developed direct-acting mechanical-oil relay type of governor. Adjustable speed turbine drives, incorpor-

ating the many features of this governor, maintain close speed regulation in spite of varying steam and load conditions and insure the flexibility of speed control demanded of a modern paper machine drive. Many of these turbines are operating successfully in a variety of mills and are an important factor in the production of uniformly high quality paper at low cost and with a minimum of maintenance.

Power Distribution

Metal Clad Switchgear

The use of metal-enclosed cubicle and metal-clad switchgear is becoming standard in the industry. Completely factory built and delivered to the mill location fully assembled, it requires only generator and feeder service and external control wiring connections. This assures proper alignment of component parts, adequate insulation and clearances, and a fully-housed structure which may be readily inspected and serviced. To meet individual mill requirements both stationary and removable circuit breakers are used. Complete safety for the operators is afforded with all live parts enclosed and interlocked.

Air circuit breakers are finding increased use in the industry. These "de-ion" breakers have a useful time delay on moderate overloads, with instantaneous trip under short circuit conditions. Compact, with high interrupting capacities, they make exceptionally economical feeder switchboards. With the expansion of air breaker developments utilizing the "de-ion" principles for faster breaking action, speedier arc extinction, and higher interrupting capacities, these breakers are available for virtually all indoor applications in the industry.

Simple Fuses Solve Old Problem

The boric acid high voltage fuse, which was developed comparatively recently, has been applied in a number of mills, in connection with 2300 volt distribution. The rupturing capacity of the fuse on 2300 volt systems is over 100,000 kva, and it serves to clear shorts of various magnitudes in the following time periods:

3000 amperes - 3 cycles
5000 amperes - 2 cycles
10000 amperes - 1 cycle

Construction of the fuse is such that it may be used as a disconnect switch. It is a safe and economical solution to many circuit protection problems where more costly apparatus cannot be justified. The fuse elements of the boric acid fuses are renewable, and renewable elements are readily replaceable in the permanent fuse structure.

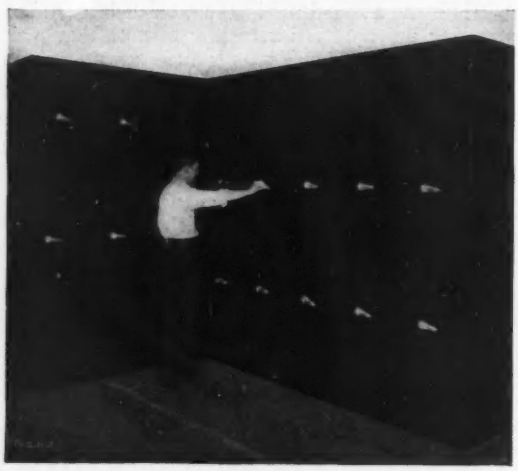


Fig. 3
View of Assembled Control Center Showing Safe Compact Layout.

Fig. 4
The Utmost Simplicity of Power Layout Characterizes This Sectional Electric Drive on a High Speed Kraft Machine.

The boric acid current limiting fuse is a new development. It makes use of the basic principles of the boric acid fuse with the additional advantages of a current limiting fuse element and a resistor arranged to limit surge voltages. It may be placed ahead of oil immersed contactors of low rupturing capacity and the combination may be applied to 2300 volt systems having short circuit capacities of 150,000 kva. Like the boric fuse it is constructed so that it may be used as a disconnect switch, and provides an economical solution to many circuit protection problems.

Use Compact Coordinated Power Centers

The development of the Power Center has resulted from the need for a compact coordinated substation which can be installed quickly and at low cost near load centers in industrial plants. At present it has found widespread use in Air Bases, Navy Yards,

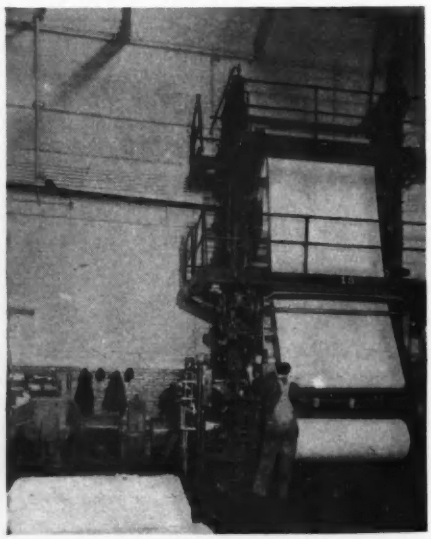


Fig. 5
A Modern Adjustable Voltage Drive with Driving Motor Geared to Bottom Roll of an 83-Inch 16 Roll Supercalender. The Centralized Operators' Panel and Socket Type Ammeter Are Shown to the Left of the Operator.

Army Camps, synthetic rubber plants, and other large defense projects.

The Power Center is a completely coordinated unit substation consisting of a high voltage section, a transformer section, and a low voltage section. Completely factory assembled and tested, it may be installed at low cost in a minimum of space. The integral assembly design provides maximum safety. The National Electric Code permits air and Inerteen-insulated units to be installed indoors without fireproof vaults. The Power Center greatly reduces installation time and costs, assures proper coordination of component parts, and provides maximum safety for mill personnel.

Air Cooled Transformer Has Advantages

A recent and important development is the air-cooled transformer. These transformers use no cooling or insulating liquids of any kind. They are cooled completely by natural ventilation and eliminate fire, explosion, and toxic gas hazard. Because of their safe construction, these air-cooled transformers may be installed anywhere indoors without the necessity of building a protective vault to meet National Electric Code requirements. Valves, cooling tubes, liquid level gauges, and the expense of testing and reconditioning liquids are entirely eliminated—effecting economy of space, improving appearance, and reducing inspection and maintenance to a minimum. Indoor installation of the air-cooled transformer allows it to be placed near the load center. This reduces length of heavy copper secondary cable runs and results in improved voltage regulation. These advantages are obtained on either radial or network systems.

Motor Control

Control Centers

The many features of completely factory built and tested switchgear have recently been extended to the field of low voltage distribution in the metal enclosed control center. These types of equipment are particularly suited for pulp and paper mills. All of the elements are fully protected against the adverse moisture conditions prevalent in the mills and the accessibility permits establishing the adequate inspection and maintenance schedule essential to uninterrupted service.

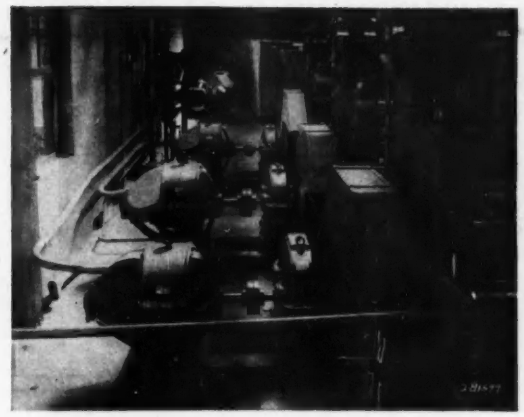


Fig. 7

Tandem Board Calendering Machine with Sectional Type Adjustable Voltage Drive with 30, 40 and 50 hp. Driving Motors. The Control and Motor Generator Set Are in the Background.

The control center consists of a framework of standard width and depth arranged to provide motor control and disconnecting elements, incoming bus structure, and convenient terminal boards and raceways for control and feeder circuits. Each individual control element consists of a "de-ion" circuit breaker and a complete motor controller assembled on a supporting metal base which is rigidly secured to the framework. Each unit is provided with a hinged cover to permit ready access for inspection and maintenance. The structures are arranged so that any number of vertical sections can be mounted together to form a continuous enclosed structure.

Completely factory-built and delivered to the mill location fully assembled, these control centers require only generator and feeder service and external control wiring connections. This assures proper alignment of component parts, adequate insulation and clearances, and a fully housed structure which may be readily inspected and serviced. This arrangement permits installing the complete structure in a minimum of time, with minimum costs and with a maximum saving of valuable floor space.

Improved Synchronous Motor Control

A new and important Westinghouse development,

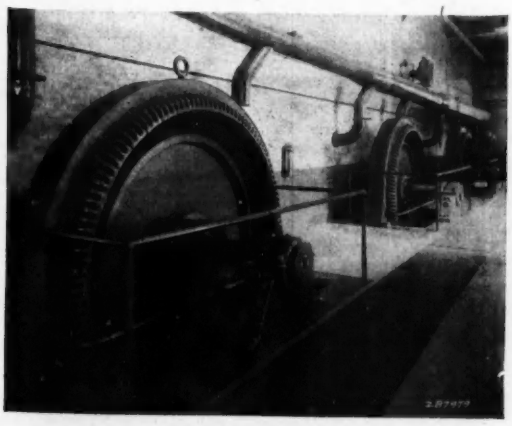


Fig. 6

Four 1000 hp., 225 rpm., 80% Power Factor Synchronous Motors Direct Connected to Grinders in a Wood Fibre Insulating Board Mill.

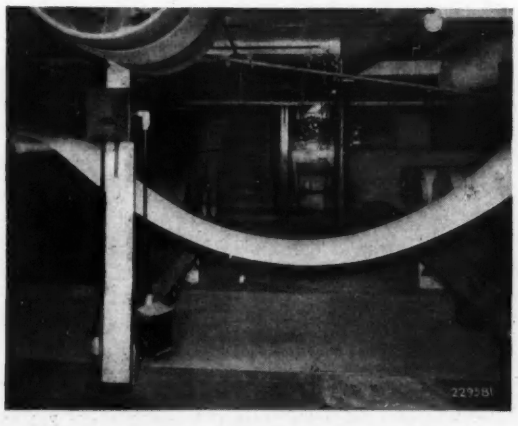


Fig. 8

Electronic Loop Regulator in This Coating Machine Holds Loop within Close Limits.

the STA synchronizing relay, makes possible more satisfactory starting of synchronous motors than ever before. This is of particular interest to the pulp and paper industry which uses large numbers of synchronous motors for grinders, jordans, chippers, pumps, refiners, beaters and other applications.

The STA synchronizing relay consists of speed responsive and time responsive elements. The speed responsive element is a current relay, while the time responsive element is a rotary drum switch. Both are simple in design, rugged, require no critical adjustment, and have been proven by applications on all forms of Westinghouse synchronous motor control. The relay assures that maximum non-synchronous speed is attained before field application and that synchronizing is never attempted before maximum speed is reached which is a real advantage for high inertia loads such as chippers and grinders. The relay also assures minimum line disturbance when synchronizing because the field is applied at maximum non-synchronous speed and only when the rotor poles are in a favorable position. Automatic pull-out protection and resynchronizing if the load permits are also provided by this versatile device. The results of this development are twofold—more simple synchronous motor control equipment—and more positive and satisfactory starting than has ever before been possible.

ROTOTROL

During the past few years speeds of operation of paper forming machines, winders, supercalenders and auxiliary processing machines have been steadily increasing. A contributing factor to the successful high speed performance of these machines is the modern adjustable voltage type of electric drive. The addition of an important new electrical regulating device to the adjustable voltage drive has tremendously increased its capabilities and broadened its application. The regulator, known as the Rototrol, has been extensively applied to drives for supercalenders, core type reels, paper forming machines, and wet ends of cylinder machines. Fur supercalender drives Rototrol control assures a safe, uniform threading speed and increases reliability and economy of operation. For the paper forming machine Rototrol control assures the close speed control necessary to a high quality and uniform product. For core type reels Rototrol control assures better rolls and permits duplication of results from day to day. For auxiliary wet end drives for cylinder machines Rototrol control assures a uniform driving effort which results in increased felt life and a better product. In the future this important and proven electrical regulating device will aid in solving many of the problems which will arise in the industry.

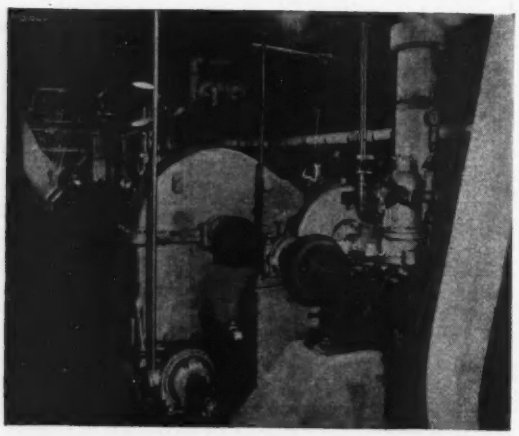


FIG. 9
225 hp. Type C-25 Adjustable Speed Turbine with Single Reduction Gear for Connection to Paper Machine Lineshaft. This Turbine is Designed for 125-lbs.-0 Deg. Superheat at the Throttle, Exhausting to 32-lbs. Back Pressure. The Governor Is Capable of Maintaining Close Regulation over a Speed Range of 25 to 1.

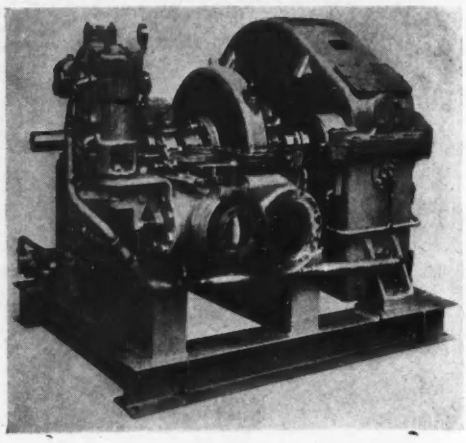


FIG. 10
350 hp. Type C-25 Adjustable Speed Turbine with Double Extended Gear for Connection in Middle of Lineshaft. The Turbine Is Designed for 265-lbs.-600 Deg.—20 lbs.

Sectional Electric Paper Machine Drive

No mill considering either a new paper machine or revamping of an old one, can afford to overlook the advantages of sectional electric drive. For instance a large high speed section electric driven kraft machine originally designed for 1250 fpm was readjusted to operate at 1540 fpm, 23 per cent above its designed maximum. This machine has been operated consistently at these high speeds and produces a 40 lb. kraft sheet at 1540 fpm. The mill management reports excellent satisfaction with the drive as indicated by a higher overall operating efficiency since adjustment for higher speeds.

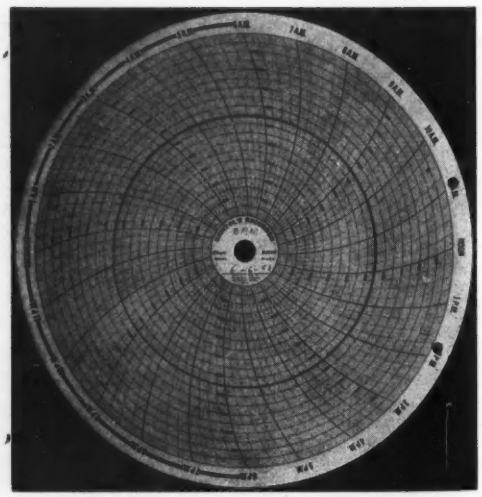


FIG. 11
Operating Chart of Adjustable Speed Turbine with Record of 24 Hour Performance.

Another outstanding record for sectional electric drive was made on the initial starting of a new 158 inch Black-Clawson Fourdrinier in one of the new Southern mills. Nine minutes from the time the gate of the headbox was opened, a clean, well-formed sheet of paper was on the reel and the machine ran without a break for six hours. The performance record of this drive has continued to be outstanding. The machine production has exceeded its designed capacity due in part to the high operating efficiency and low maintenance of the sectional electric drive.

Sectional electric drive costs little if any more than the latest types of mechanical drive. Its use assures greater productive efficiency resulting from increased flexibility, more accurate control of draw, and reduced operating cost resulting from lower maintenance and power consumption. The sectional electric drive has been profitably applied to machines of practically every type and speed range. The important features of this modern drive include:

More nearly perfect draw;
Accurate indication of the performance of each section of the machine;
Elimination of all power belts and clutches;
Saving in floor space back of the machine and in the basement.
Assurance of uniform speed of the paper machine regardless of such disturbing factors as steam pressure variation and load changes;
Saving in felts on cylinder machines;
Dynamic braking for high speed, high inertia dryer sections;
Provision for reversing calender stacks;
Uniform low speed for inching the sections;
Complete control of the machine as a whole, and of each individual section from the front or tending side;
Less personal hazard.

Sectional Drive for Auxiliary Processing Machines

Recently the trend has been definitely toward individual sectional drive for auxiliary processing machines used in the Pulp and Paper Industry. These drives utilize the adjustable voltage d-c type of drive with a suitable source of d-c power supply, individual motors geared for driving each section of the machine, and complete control, tailored to meet individual operating requirements. The operating speed range required is obtained by voltage adjustment of the d-c generator supplying power to the section motors. The motors are unregulated and are designed with the proper characteristics to inherently maintain substantially constant draw between sections over the entire operating speed range. Recently such drives have been applied to coating machines, combining machines, special board calendering machines consisting of several two-roll calenders operated in tandem, special saturating machines, special board forming machines, special drying machines, etc. These drives require a minimum of floor space and eliminate all lineshafting, countershafting, open gearing, clutches and slip belts, thus increasing efficiency and flexibility, materially reducing maintenance expense and lessening personal hazards.

Electronics Growing More Important

Electronic tubes are playing a more important role in the industry each year. Tubes have been used as paper break indicators and recorders, operation counters, smoke recorders, side register regulators, bag machine register regulators, coating machine loop regulators, speed and voltage regulators for single motor and sectional paper machine drives, to mention a few. Electronic tubes make extremely sensitive and quick response regulators which features are essential to the successful solution of many problems. Wartime developments along this line have been amazing. The exact nature of many of these developments must remain a secret until we've won this war. Afterwards the electron tube will find many new applications in control and regulating problems.

A new development is the Mototrol, an electronic device which permits the operation of d-c motors from an a-c power source. It provides a wide range of speed control with good regulation at all speeds and is arranged for preset speed with current limit acceleration. The speed is controlled with precision from a remote pushbutton station that permits the operator to maintain instant control at all times. At present, it is built in ratings up to 15 hp, with larger ratings probably soon to come. The Mototrol drive is suitable for small coating, waxing, and saturating machines, rotary cutters, wire shakes, and rotary screen filters.

High Frequency Dielectric Heating

Considerable progress has been made in the development and use of high-frequency equipment for dielectric heating.

Its use to apply heat to non-metallic materials opens a new field in the design and construction of commercial products.

Dielectric heat's most important characteristic is its ability to instantly create heat within the material instead of forcing the heat in from the outside surface. This makes it particularly adaptable to the fabrication of practically all non-conducting materials, such as paper, which are formed or processed by heat. Dielectric heating is advantageous in that it develops uniform heat throughout the product, regardless of poor thermal conductivity so that greater thicknesses can be heated or cured, it can be applied without damage to the surface, and it sets glues or plastic binding materials quickly which is a great help in the forming of laminated products.

There has been considerable discussion about the use of dielectric heating for drying paper on the paper forming machine. This is possible, but at present it does not appear to be feasible due to higher operating costs as compared with the conventional method. However, it is quite possible that due to the ease of control of dielectric heating it may be used for supplementary drying or for drying machine coated, machine sized or water finish papers, and for special paper products.

Paper Industry Complimented

The pulp and paper industry are to be complimented on their spirit in keeping existing equipment in the best possible operating condition, and on their healthy attitude regarding post-war plans and opportunities. Many of the mills are actively engaged in post-war planning and a number have equipment on order for delivery as soon as possible after the present emergency. It is hoped that the developments listed above will aid in formulating plans for future operations.

D. C. Everest to Receive TAPPI Medal

The 1944 medal of the Technical Association of the Pulp and Paper Industry will be presented to David Clark Everest, president and general manager of the Marathon Paper Mills Company, Rothschild, Wis.

The medal was unanimously awarded to Mr. Everest by the TAPPI executive committee and is given to an individual for making outstanding contributions to the technical advancement of the Pulp and Paper Industry.

Mr. Everest was born at Pine Grove, Mich., October 13, 1883. He entered the employ of the Bryant Paper Company, Kalamazoo, Mich. as a clerk in January 1900 and was assistant manager of the Munising

DAVID CLARK EVEREST

Paper Company, Munising, Mich. from 1902-1907. He was manager of the Williams-Gray Company, Chicago, Ill. from 1907 to 1909. On March 1, 1909 he went to Wausau, Wis. as manager of the newly organized Marathon Paper Mills Company where he had charge of the construction of the Marathon plant at Rothschild, Wis.

He has been connected with the organization of several paper companies and a number of other manufacturing companies, including the Masonite Corporation at Laurel, Miss.

He was twice president of the American Paper and Pulp Association and was one of the organizers of the Institute of Paper Chemistry at Appleton, Wis., and has been a trustee and officer since its inception. From September 1940 to October 1941 he was chief consultant to the Pulp and Paper Branch of the Office of Production Management, the forerunner of the War Production Board and has been interested in the Technical Association of the Pulp and Paper Industry since its organization in 1914 and has served as a member of its executive committee.

The medal award will be made at the annual luncheon of the Technical Association of the Pulp and Paper Industry to be held at the Commodore Hotel, New York City on Thursday, February 17, 1944. The presentation address will be made by Allen Abrams, now with the Office of Strategic Services in Washington, D. C.

To Study Pulpwood Supply

WASHINGTON, D. C., Nov. 24, 1943—Representatives of the Forest Products Bureau and the Paper Division, of the War Production Board, and the Newsprint Administration of the Wartime Prices and Trade Board of Canada conferred November 15, 1943, in New York to consider ways and means of extending the pulpwood supply with particular reference to newsprint. At the close of their meeting they issued the following statement:

"There was complete agreement that all practical methods of conserving fibres that can be applied in the near future must be decided upon and carried out.

"There was concurrence that there are four possible methods of conservation available but it is recognized that any or all of these methods may increase costs.

(1) Reducing the basis weight without increasing sulphite pulp content; this accomplishing savings roughly proportionate to the percentage of weight reduction, but only if the tonnage of newsprint consumed is reduced proportionately.

(2) Adding mineral filler and thus making available the wood fibre replaced thereby.

(3) Reducing sulphite pulp content by slowing down machines if necessary. Fibre would be conserved through replacement of sulphite pulp by ground wood pulp which requires less wood per ton.

(4) Replacing some new fiber with waste paper.

"The Advisory Committee of the United States Newsprint Industry meeting with WPB officials Wednesday, November 10, recommended that conditional upon customer approval and proper arrangements by the OPA to cover increased costs, sufficient trials, extending over the next three months, of the practicality of 30 pound basis paper should be made. The use of waste paper by United States mills is also being given consideration.

"The Advisory Committee to the Newsprint Administration of the Wartime Prices and Trade Board of Canada, has recommended that, with support from their customers and depending upon proper arrangements with all governmental departments affected, the Canadian manufacturers were better able to bring about conservation of fibre by the addition of filler, the reduction of percentage of sulphite pulp and the replacement of new fibre with a small percentage of waste paper. The Advisory Committe estimates that the total percentage savings by these three methods would substantially exceed the savings brought about by reduction of basis weight from thirty-two to thirty pounds.

"Because of the many obvious complexities of the situation, the variety of equipment and the different operating conditions in the industry in both countries, it was the consensus of opinion that conservation could be best furthered by the appointment of a technical committee to study, coordinate and finally recommend the best and most suitable methods of procedure."

THE PAPER INDUSTRY AT WAR AND AFTERWARD

(Continued from page 37)

special committees of TAPPI, the initiative was taken in presenting and demonstrating to representatives of the armed forces products that would be suitable to meet wartime requirements. Many of these products were substitutes for material high on the priority list. Some have proved more desirable and serviceable than the high priority products they replaced, and all have well served their purpose. The paper industry may well be proud of its record in national defense.

Products Developed by Technical Men

The present world war is a technical one involving principles of chemistry, physics and engineering not known or dreamed of ten years ago. The technical men of the pulp and paper industry have made and are continuing to make a material contribution to the war effort. Without the products of their invention, many vital needs might not have been as ably met. Two illustrations will demonstrate this fact.

The supplying of troops on hostile shores where there are no unloading facilities is always a hazardous undertaking. In North Africa, Italy, and on the islands of the South Pacific, the success or failure of delivering supplies has many times meant a matter of life or death to our landing forces. Wooden boxes could not be used for the food and munitions which must be sent ashore. Water-tight metal containers were not available due to the metal shortage. A water-tight paper carton which could be immersed for many hours in sea water without injury to its precious contents was developed by the use of special waterproofing materials with the addition of new products which enabled the board to retain a high strength, even though wet. This is known as V-Board. Many thousands of these paper cartons have been dumped overboard from supply ships and recovered as they washed ashore on the beaches.

The second illustration concerns maps which are as essential to warfare as food and munitions. In the hot, humid jungles of the Pacific the best of map paper became a limp, useless affair even before it could be printed in the mobile printing plants at Army headquarters. To overcome this problem, a special map paper was developed which retained its strength and usefulness even after being soaked in water.

The following list is of interest as showing some of the other important developments in which pulp, paper and board play a part, to the credit of the paper industry: multiwall paper bags embodying high wet strength and waterproofness for 400 different commodities; 7½ gallon gasoline bag; delousing bag; preformed molded pulp products, such as flashlight cases, alarm clock cases, etc.; paper parachutes, flare, radiosonde and cargo types; shell containers; bomb shipping rings; fluorescent map paper; paper twine and strapping; metal package conversion; high wet strength carpet yarns as an improvement and substitute for jute in Axminster rugs; paper vests; paper blankets; lens wiping tissue; oil wiping tissue; fiber conduit; paper printing plates; camouflage paper; lignin laminates; MVP (moisture vapor proof) wrapping papers for dehydrated foods and other uses requiring a paper resistant to water vapor. In addition to the preceding, there has been developed a special nitrating pulp for explosives, and other special dissolving chemical pulps.

Production of War Materiel

Machine shops in many paper mills have used their facilities in producing materiel for the Army, Navy and Merchant Marine. In this work they were required to keep a careful record of costs subdivided into operations and had to meet close tolerances, in many cases more exacting than is usually required for ordinary pulp and paper mill work. Shops were taught the use of special jigs and fixtures, the correct grinding of tools, and other such valuable information. Mills with well equipped shops and adequately trained personnel have had little difficulty in meeting these requirements, while for those lacking good equipment and a qualified staff it has been much harder. In the author's judgment, the industry will greatly benefit by this education and training.

Maintenance and Repairs

The paper industry has done an excellent job in maintaining its production rate with almost no replacements and with the use of substitute material because that ordinarily used was required for war production.

Equipment in pulp and paper mills has suffered, however, due to the lack of replacements and repair parts, the degree depending on the ability, ingenuity, and general policy of the company's engineering department in organizing a suitable maintenance department with adequate repair equipment. Those with wide awake engineers and with well equipped machine and repair shops have done an excellent job and have well justified all the money spent to provide these modern shops. In many companies, however, the repair shop is poorly equipped and is too often staffed with mechanics who lack sufficient training. It is these mills which have suffered heavily during this wartime period.

At the end of the war, large quantities of excellent machine shop equipment will be put on the market for sale at low cost. Mills are strongly urged to discard at that time all old equipment such as lathes, planers, drill presses, milling machines, etc., and to replace it with the modern equipment that will have become available.

Inability to secure corrosion-resisting material has required the use of many substitutes which will have to be replaced at the end of the war. This substitute material has been a handicap to chemical pulp mills. In spite of this disadvantage, the engineering staffs of the industry have done an excellent job in maintaining production and quality of product with all of the various hindrances encountered.

Commercial Use of War Developments

Will pulps, papers and boards improved or developed for war uses have any commercial use in the post-war period? The answer is, of course, *yes*. Every executive who was asked this question was in agreement. Many of them pointed out that these new products will result in a broader market and will thus add materially to the total tonnage of our industry. One man stated his belief that the present better packaging materials and methods will continue

into commercial fields with a broad expansion as they replace wood, tin and glass, and that, when once used, they can be collected for re-use.

It is the author's belief that these new or improved old products will materially increase the output of the industry. The qualities that have made these things essential for war use will also fill civilian needs, thus helping to increase the per capita consumption of paper products.

It is believed that the growth in commercial use of these new products will parallel that of the wallboard industry. Prior to the First World War wallboard was a soft, flimsy, laminated sheet of groundwood pulp or old papers. It had neither strength nor stiffness and was without water resistance. Early in 1917, a pile of wallboard, if left out in the rain, soon became a shapeless mass of pulp. By early 1918, however, great improvements were made in its manufacture and it became possible to use it successfully as the outside walls of army barracks. The improvements made became the foundation on which was built the great wallboard industry of today, which has increased its capacity to more than twelve times what it was in 1917.

New Equipment and Improvements

There is little evidence at present to indicate any extensive program in the building of new pulp and paper mills. The only new construction that might take place, other than in the South, would undoubtedly be on the West Coast in order to secure a better utilization of the large amount of slab wood which is available there. This type of wood may now be economically barked by the use of the new hydraulic barker.

There is a very definite belief that the post-war period will bring an extensive rebuilding program, however, in many mills throughout the country. Lack of man power during the war has clearly demonstrated the need to install every possible labor-saving device. Many executives and engineers of far-sighted companies are today making an intensive study of the possibility of reducing costs, increasing yields, improving quality and reducing man power. Inefficient boilers and power generating equipment will be discarded for modern high efficiency units with a material reduction in operating and maintenance costs. Many pieces of obsolete equipment in pulp and paper mills will be replaced by up-to-date equipment designed within the last two or three years. More automatic controls will be used. Improvements will take place in our present cumbersome batch stock preparation systems.

Paper machine speeds will be increased, and many grades now produced on old, slow, narrow machines will be made on modern machines at lower costs and of superior quality. These speed increases will come first in the newsprint field, as some of the most modern machines designed for this kind of paper were built for speeds of 1700 to 1800 feet per minute. The present speeds of many paper machines making book papers are from 400 to 550 feet per minute; these machines must either be speeded up or replaced with modern equipment. There are many other kinds of paper that are due for material increases in their speed of manufacture. In no case, throughout the history of the paper machine, has any grade of paper been reduced in quality due to an increase in speed, provided the mechanical and hydraulic phases of the problem have been correctly solved.

It is firmly believed that the post-war period will bring substantial increases in demands for all paper products, and mills should plan now to put their manufacturing processes into first-class condition. They should also be ready with definite plans for rehabilitation and improvement so that they may take advantage of the excellent equipment that will be available when the present priority restrictions are removed. The post-war period will see a continuation of high taxes for many years; demands for paper will be large, both here and in foreign markets, and our American mills must be in a position to produce at the lowest possible costs This means the elimination of inefficient equipment and processes and the installation of thoroughly modern machinery. Manufacturers of pulp and paper mill machinery are now making improvements in equipment, and new devices have been designed. These will be presented to the industry in the early post-war period, much of it being shown by blueprint and catalogue.

Business Prospects

It is particularly interesting to find a generally optimistic attitude throughout the industry in regard to its future during the first ten years after the war. It seems to be an almost universal opinion that there will be a high volume of business for the pulp and paper industry. The return to normal commerce, the new domestic markets available and the increased demands in the export field should open new doors for us. Although some men have expressed the opinion that this high volume will result in a "profitless prosperity" due to high costs and taxes and the possibility of too much government control, others have said they thought new markets of considerable size will be opened as a result of the numerous pulp, paper and board products developed for war purposes. Many of these products will replace wood, metal and glass in the packing and shipping fields.

It is generally agreed that we will see a material increase in industrialization throughout all the countries in the world following the war. It is a known fact that industrialization cannot occur without a substantial increase in consumption of all kinds of pulp, paper and board products. The education and industrial development of any country may be measured by its pulp and paper consumption. South America with its 3 or 4 pounds of paper consumption per capita, and China and India with less than ½ pound per capita, when compared with the United States with its consumption of 275 pounds per capita, give some indication of the possibility for the expansion of exports and for the future growth of the paper industry in other countries.

Many countries formerly dependent on North America, England, and Europe for paper have had their supply tremendously reduced and, in some cases, entirely cut off due to the war. Many of these countries are now definitely considering the development of their own pulp and paper industry. This is notably true in South America, South Africa, India and China. In the opinion of the author, the building of these new foreign mills would not seriously reduce our exports to those countries; instead, they would be the means of actually increasing the exports.

The grades of paper that will be most in demand there will be the lower or coarser grades for wrapping and packaging. New mills in foreign countries will not at once be able to produce the high quality papers produced here, so that these higher grades will necessarily continue to be exported from this country.

Imported Pulp Competition

There is considerable diversity of opinion in regard to the possibility of competition with imported pulps in the first two or three years following the end of the war in Europe. The prevailing opinion of at least two out of three prominent executives in the industry is that there will be almost none.

It is known that a number of pulp mills in Finland, Norway and Germany have been seriously bombed, and it will take a considerable period for them to get back into production. There is little information available as to the extent of the damage to paper mills in Europe. In all probability these can be put back into production in less time than it takes to rebuild pulp mills. From this it would seem that European paper mills will require a very large percentage of the pulp that can be produced in the European countries for quite some time, and that little foreign pulp could therefore be brought to this country.

There is one unknown factor, however, and that is the possible increase of pulp production capacity in Russia. We know that Russia has made tremendous strides in increasing all of her industries, but little is known regarding her increases in the production of pulp. Some increases have been made, but no estimates are available to indicate the extent to which Russia will absorb this production, and the possibility of receiving pulp after the war from this source remains an unknown factor.

There is another point that must be taken into consideration and that is the ability of England, France, Germany and Italy to purchase Scandinavian and Finnish pulps after the war, and the possibility that these pulp producing countries might find it more advantageous to sell to an American market rather than to war torn countries with, for the time being at least, a smaller purchasing power. It is the author's opinion, however, that we will see little competition from Scandinavian and Finnish pulps in the first year or two after the end of the European war.

There is a variance of opinion as to the ability of the world's pulp mills to supply the world's pulp requirements. Some men think there is an oversupply of pulp, while others, equally well informed, express the belief that demands will be greater than the present world capacity.

The world pulp situation in the next ten years should receive some careful study. With the exception of Canada and the United States, all other countries during the past two or three years have suffered from a serious shortage of all kinds of paper. South America, Africa, China and India, producing almost no pulp or paper, have been especially hard hit These countries, prior to the present war, had begun to erect small paper mills using, to a great extent, imported pulps. The present paper restriction has made them all the more determined to increase their manufacture of paper, and many more small paper machines are bound to go from the United States to these countries after the war.

These countries are sure to materially increase their per capita consumption of paper. In most of them there is a limited supply of wood for pulp or none at all. This, then, brings up the question: Who will supply the woodpulp for these mills?

It is generally agreed that Germany, Norway, Sweden and Finland under normal pre-war times were using their pulpwood supply at about the rate of annual growth. The northern United States from Minnesota to Maine has no reserve timber land for pulp mill expansion. This leaves eastern and western Canada, Oregon, Washington, Idaho, Alaska and the southern states as the pulpwood timber area. The only other large spruce wood growing area is in northern Russia, which is said to have over 60% of the world's supply of spruce pulpwood. It seems reasonable to expect that some new mills will be built in this area for world pulp requirements.

Post-war Problems

It seems to be an almost unanimous opinion that one of the most important post-war problems is political. The fear has been expressed by many executives that we will have government control of industry, production, supply, and prices, and that importations of pulp and paper, not being under U. S. Government control, may adversely affect our American industry. Continuation of our good neighbor policy and our lend-lease activities may still further complicate this situation. All of this is, of course, dependent upon a continuation of the present administration or its policies, or a return to a sane and economical national administration, the first consideration of which is to build American industry, as has been the practice during most of our American history.

In the management field, some of the post-war problems may be listed as follows: Adequate tariff regulations; protection against depreciated currencies; protection against subsidized steamship rates; rights to use global airfields built with American money; development of a national collection system for waste paper and board; elimination of manufacturing wastes; increased use of groundwood in book papers; cost reductions; greater use of high yield pulps.

Many interesting letters were received from technical men concerning post-war technical problems. The same thought was expressed in all of them: Probably never has the technical man been more conscious of the opportunities in his industry for its advancement by the development of products that will find markets in new fields.

The following phrases occur again and again in these letters: "better utilization of raw materials"; "reduce operating costs"; "improve quality of product without increasing costs"; "prepare to overcome competition from metal foil, tin, steel, wood, glass, plastics, transparent sheeting, etc."; "reduce power requirements"; "build every paper for a special use"; "use more groundwood in book and magazine papers"; "increase the use of machine coated papers"; "increase the use of opacifying agents like titanium oxide." These and many other comments show that the technical man is alive to the needs of the industry and to his part in its future.

The remarks made in one reply are aptly expressed. "I think the most important problem for all technical men of the pulp and paper industry in the post-war period is that of demonstrating to the sales and production end of the industry that a healthy growth of the industry as a whole can be maintained if the industry as a whole holds its head up and observes the tremendous possibilities which are already on the horizon. When vision and the spirit of exploration permeates all through the paper and pulp industry, the things that we will do with pulp and paper will make our war developments look like pretty small potatoes."

Cooperative Effort

Many problems in the paper industry, common to

groups of mills, could best be solved by cooperative effort. At the present time some of these problems are worked on in a more or less hap-hazard manner by individual mills, largely by cut-and-try methods with the result that the problem is seldom, if ever, completely solved.

A case in point is the design and method of operation of the cylinder and vat of a cylinder machine. This device has been in use in the industry for a hundred years, and the industry today is divided very nearly on a 50-50 basis in regard to what is the optimum direction of flow of the stock to the mold. This problem will never be correctly solved until proper experimental work is carried out on a full sized vat under engineering laboratory conditions, where the true principles involved may be determined.

The design of the Fourdrinier headbox is another problem, the importance of which will increase as higher and higher paper machine speeds are obtained. There are many designs of headboxes in use with advantages claimed for each. Here, again, this problem is one of hydraulics and, until its true hydraulic principles are determined, we will continue to have new designs, but not the most efficient device that it is possible to build.

The question of drying paper on steam heated driers involves principles that are as yet unknown. The development of these principles would undoubtedly simplify many cumbersome drainage systems and improve the operating condition on a paper machine.

There are many such problems that cannot be solved by the individual paper mill or by the machine builder. They are problems for the engineering laboratory, worked out without regard to the paper-making phase. In the past, many hundreds of thousands of dollars have been spent by the industry in trying out new schemes, new devices, and new equipment, only to find too often that they were unsatisfactory. Groups of mills could combine in a study of these problems, the outcome of which would simplify manufacturing processes, insure that the industry was using the best possible method, and result in a saving in operating cost.

Forestry and Forest Engineering

Little need be said about the desirability of greater effort in forestry. It is logical to assume that we will continue to have an increasing per capita consumption of pulp and paper products, and plans must be made to determine where the necessary wood crop is to be grown and the methods that will ensure sufficient acreage, combined with proper reforestation and suitable cutting methods. There are vast areas — probably ample land to grow many times our present pulpwood requirements — in the South and West which are unsuited for anything but the growing of wood.

At the present time costs of pulpwood throughout the country are high, and there is little likelihood of their going back to pre-war prices. One company has made considerable progress in reducing wood costs by the use of modern forest engineering methods. Through their effort there has been developed many labor saving devices in the cutting down of trees, hauling to central points, cutting into desired lengths and loading onto hauling equipment. There is much yet to be developed along this line, the results of which will reduce present labor costs due to the reduction of man hours.

Summary

On studying the picture as a whole, three things appear to stand out prominently: (1) that the pulp and paper industry is due, immediately after the war, for large scale purchasing of equipment, (2) that there is no immediate prospect for the construction of many mills, and (3) that there is every indication of good business just ahead. The industry has played its part in this time of war and played it well; it will go forward into the post-war period and the years beyond with a new and wider vision of fields to conquer.

Powell River Starts Research Program

The Powell River Company has embarked upon a broad program of research into the possibilities of post-war industrial development at Powell River, B. C., beyond the field of pulp and paper production. Specialists are now at work on the newly set up research and development plan headed by I. H. Andrews, the company's control superintendent.

At the present time extensive experimentation is being carried on in the field of plastics. "At the moment," said Mr. Andrews, "we are investigating the plastic properties of the lignin portion of waste sulphite liquor" which, up to now, has been run off into the seas as refuse.

The experiment is being directed to the future production of what is termed "hard plastic products" for industrial and commercial use. The research, however, goes far beyond the potential manufacture of plastic materials. As Mr. Andrews explained it:

"Basically our research, on the one hand, is aimed at the greatest utilization of raw materials and exploration into new ways and means of using the various species of materials. On the other hand, our program is directed at diversification of our operations to the end that new products might be manufactured locally, as well as broadening out in the general pulp and paper field."

The research and development plan is not in any way confined to local chemical fact-finding. It embraces a wide program of research into conservation of raw materials, continuity of supply for the years to come, markets and other factors.

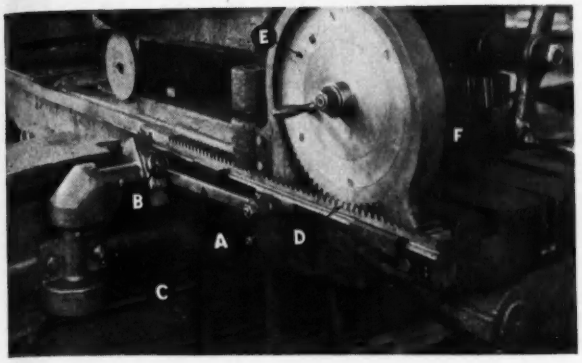
It is expected that part of this comprehensive program—particularly that dealing with the conservation and utilization of logging and sawmill waste (on which experimental work is progressing at the Comox Logging Company's operations at Ladysmith) will emerge from the blueprint stage to one of actual production soon after the war.

This program of expansion will mean greater employment locally and elevate Powell River from the status of a "one-industry" town to that of a much larger and diversified industrial center.

Ethanol Now Made in Canada

The Quebec North Shore Paper Company, subsidiary of the Ontario Paper Company, has announced that for the first time in Canadian industrial history waste sulphite liquor is being utilized to make industrial alcohol. This is being done in the company's plant at Thordd which, it says, is "the only plant of its kind in this hemisphere." The alcohol (known chemically as ethanol) is being supplied to the order of the Chemical Controller of Canada and is being used enetirely for war purposes—to make synthetic rubber, explosives and other war materials.

OLD as well as NEW
LOBDELL
ROLL GRINDERS
can readily be equipped with—



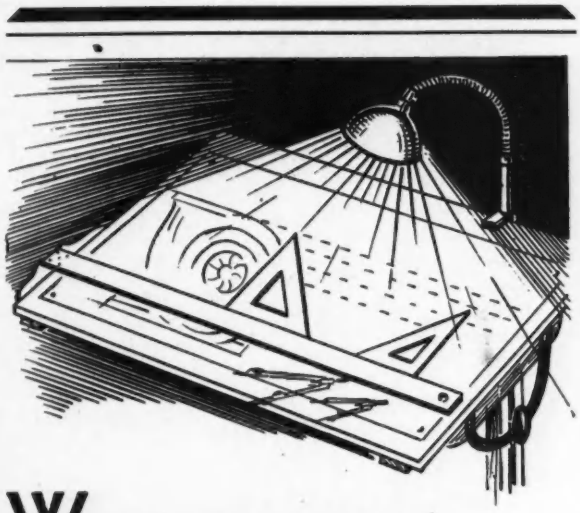
The New Automatic
GRINDING WHEEL IN-FEED

This latest patented feature completely eliminates the need for constant attention by the operator . . . automatically maintains a constant and uniform grinding pressure . . . reduces wheel wear . . . and speeds up the grinding operation. The Automatic In-Feed Attachment can be added to any Lobdell Roll Grinding Machine at present equipped with the patented Lobdell Crowning Device, since the two work in conjunction, as shown in the above illustration. A crank rod (A), the stroke of which is adjustable by means of a thumbscrew (B), is actuated by a gear which engages the same rack (C), that actuates the Crowning Device. As the carriage traverses the length of the bed, this crank rod oscillates another rack (D), attached to the sides of the saddle and connected by a tie bar to a similar rack on the opposite side of the carriage. These racks each rotate an escapement wheel (E), which elevates a screw (F), at the rear of each of the hinged wheel rests. This regular gradual elevation feeds the grinding wheels toward the work as they traverse along the face of the roll, maintaining a constant pressure between the wheels and the work as the grinding surface wears away.

Write us for cost of adding the Automatic Grinding Wheel In-Feed to your Lobdell Roll Grinder.

LOBDELL
COMPANY
Wilmington, Delaware
108 Years in Business

Also makers of Lobdell Calender Stacks, Lobdell Micrometer Roll Calipers and Lobdell "Puraloy" Rolls.



WE'RE BURNING THE MIDNIGHT OIL FOR YOU AT SANDY HILL!.....

In a corner of the Sandy Hill plant, far from the incessant roar of production for war, the midnight oil burns nightly.

From drafting boards in the Sandy Hill engineering department great developments in paper and pulp machinery are coming to life.

FOR THOSE PLANS YOU have in mind for new plants, for additions and improvements, you will find much of interest at Sandy Hill.

KAMYR and BERTRAMS Ltd. PATENTS
•
NEILSON SLICE
•
Scofield Felt Conditioners and many others

For the future the picture is bright, interesting and profitable.

For the present, we say: Let Sandy Hill engineering counsel work WITH you and FOR you in evolving your plans.

****

Sandy Hill
IRON & BRASS WORKS
PULP & PAPER MAKING MACHINERY SPECIALISTS
HUDSON FALLS, N. Y.

New York Paper and Pulp Market Review

Newsprint Consumption of Largest Newspapers May Be Cut 24% Next Year Is Forecast of WPB—Paper Supply Situation Uncertain As Pulpwood Gains Slowly — Paper Stock Market Is Strong.

Office of the PAPER TRADE JOURNAL.
Wednesday, November 24, 1943.

Orders for paper in the wholesale market continues to indicate a less sharp upward trend. Production is still relatively high and approximately at the high level of last year at this date. The general over-all supply situation in raw materials, such as pulp and waste paper, is reported in some quarters as improved and increased supplies of paper stock are expected in the future, although labor in the latter field is a difficult problem to meet. Current reports received from many manufacturers' representatives' jobbers, and general paper merchants, indicate the rather tight supply situation continues and no immediate change is expected.

The index of general business activity for the week ended November 13 rose to 144.2, from 136.6 for the previous week, compared with 135.7 for the corresponding week last year. The index of paper board production was 146.5, compared with 140.9 for the previous week and with 134.8 for the corresponding week last year.

Paper production for the week ended November 13 was estimated at 89.4%, compared with 89.7% for 1942, with 107.0% for 1941, with 84.7% for 1940, and with 98.4% for the corresponding week for 1939.

Paper board production for the week ended November 13 was 85.0%, compared with 83.0% for 1942, with 99.0% for 1941, with 77.0% for 1940, and with 83.0% for the corresponding week for 1939.

The Printing and Publishing Division of the War Production Board announced last week that a reduction in the consumption of newsprint paper of about 24% may be expected in 1944 for some of the large newspapers. The curtailment will range from nothing for a monthly base tonnage of 25, to 8.80% for 500 base tonnage, to 14.40% on a 1,000 base tonnage, and up to a cut of 23.52%, or 4,704 tons, for newspapers with a base tonnage usage of 20,000 tons. This restriction is expected to apply in the first quarter of 1944.

Wood Pulp

The wood pulp supply situation continues to be considered critical, despite the small improvement in the pulpwood situation. Supplies of pulp wood increased monthly through August, according to one comprehensive report, and new supplies of domestic and Canadian wood pulp were close to 2,500,000 tons in the third quarter of 1943, which is only about 2.2% under receipts in the third quarter of last year. Supplies decreased, however, in the first quarter of 1943 to 16.2%, and 13.7% in the second quarter of the current year, compared to the same period in 1942.

Rags and Paper Stock

Mill buying of cotton cuttings is reported active, with some grades rather scarce. Colored cuttings are in heavy demand at this date and the new rag market is very firm.

Demand for the roofing grades of old cotton rags is also active, with moderate demand reported in the other grades.

All hard fiber cordage is in active demand, with an urgent need for old No. 1 Manila rope to fulfill war requirements. Prices are strong.

The scrap bagging market is currently more active than for some time past, under an improved demand. Prices are firm and no important change in quotations have been reported during the current week.

Mill demand for waste paper continues heavy and the paper stock market is strong at this date. Reports late last week indicated that some mills in their anxiety to obtain sufficient waste paper, were buying direct, as well as through the waste paper trading channels. Prices are firmly maintained at ceiling levels.

Twine

No important change in the twine market has been reported at this date. Stocks are very limited and paper twines of twisted kraft paper, are coming into the market in increased volume.

A MONEY SAVER

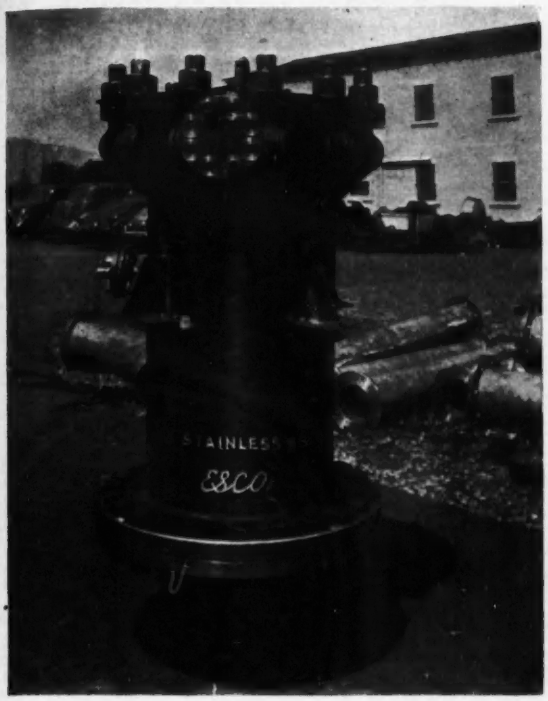
The Cambridge SurfacePyrometer enables the paper maker to maintain the desired progressive temperature change in the drying roll train. Thus production may be safely speeded up to the maximum and a common cause of spots, cockle, curl and blister avoided. This instrument quickly and accurately determines surface temperatures of moving or stationary rolls. Ruggedly built for shop use.

Write for bulletin 194 S.

The Cambridge is made in a hand model and with the extension attachment to reach those hard-to-get-at places.

CAMBRIDGE INSTRUMENT CO., INC.
3732 Grand Central Terminal, New York, N. Y.

CAMBRIDGE SURFACE PYROMETERS



ESCO

STAINLESS EXPERIMENTAL DIGESTER

This illustrates some of the calls made on our engineers and foundrymen, a high-pressure experimental digester made of ESCO STAINLESS, showing the combination of cast and welded construction in stainless steel. We will be happy to work with you on your corrosion-resisting problems.

ELECTRIC STEEL FOUNDRY

PORTLAND, OREGON

2141 N. W. 25th Ave.
SEATTLE
WASHINGTON
2724 1st Ave. South

ESCO

Phone ATwater 2141
VANCOUVER
BRITISH COLUMBIA
1500 Royal Bank Bldg.

Idea Starters...

PQ SILICATES

Perhaps silicate of soda is known to you as a size in the beater, or maybe as a deflocculating agent for clays. Whether your familiarity is limited to these, or whether silicate is now used in some other way in your plant, you'll find our bulletin "Brands, Properties, Applications — PQ Silicates" stimulating. Ask for a copy.

Meantime, current developments in using silicate of soda in the paper industry as recorded in patents may suggest to you other services for silicates.

Washable Wall Paper: A coating mixture of soy bean flour dispersed in water, plus ammonia, pine oil, soap, kaolin, tinting pigment and silicate of soda.

Bonding Metal Foil to Paper: Clean foil is immersed in hot water for a few minutes or heated to 100°-200°C. to remove film of gas. A silicate film then applied which permits bonding to paper with a gentle pressure.

SILICATES OF SODA

PHILADELPHIA QUARTZ CO.

Gen'l Off.: 125 S. 3rd St., Phila. 6, Pa.
Chicago SalesOff.: 205 W. Wacker Dr.
9 Mfg. Plants · Distributors in 65 cities

PQ

MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL.
Wednesday, November 24, 1943.

BLANC FIXE—The market for blanc fixe continues to conform to prevailing prices. Demand is reported moderate. The pulp is currently quoted at $40 per ton, in barrels, at works; the powder is currently quoted at $60 per ton.

BLEACHING POWDER—Current demand is reported active. Supply situation satisfactory. Bleaching powder is currently quoted at from $2.50 to $3.10 per 100 pounds. All prices in car lots, in drums, f. o. b. works.

CASEIN—OPA maximum prices on processed acid-precipitated casein are as follows: 10,000 pounds or more, 24 cents per pound; 2,000 pounds, 24¼ cents per pound; less than 2,000 pounds, 24¾ cents per pound, f. o. b. shipping point. Imported 10 to 10½ cents per pound.

CAUSTIC SODA—Supply situation tighter, as current demand is reported in excess of production. Prices continue unchanged. Solid caustic soda is currently quoted at $2.30 per 100 pounds. The flake and ground are currently quoted at $2.70 per 100 pounds. All prices in car lots, in drums, f. o. b. works.

CHINA CLAY—Demand for some grades of china clay is reported fair this week. Domestic filler clay is currently quoted at from $7.50 to $15 per ton; coating clay is quoted at from $12 to $22 per ton, at mines. Imported china clay is currently quoted at from $13 to $25 per long ton, ship side.

CHLORINE—The market situation is again reported tight, due to heavier war orders. Production continues steady. Prices continue unchanged. Chlorine is quoted at $1.75 per 100 pounds, in single-unit tank cars, f. o. b. works.

ROSIN—Lower prices are quoted on some grades of rosin this week. "G" gum rosin is currently quoted at $4.02 per 100 pounds, in barrels, Savannah. "FF" wood rosin is currently quoted at $4.02 per 100 pounds, in barrels, New York. Seventy per cent gum rosin is currently offered at $4.21 per 100 pounds, f. o. b. works.

SALT CAKE—Demand continues moderate. Quotations on salt cake continue to be reported unchanged. Domestic salt cake is currently quoted at $15 per ton, in bulk. Chrome cake is currently quoted at $16 per ton.

SODA ASH—Demand for soda ash continues to be reported as heavy. Prices continue to conform to prevailing quotations. Prices on soda ash in car lots, per 100 pounds, are as follows: in bulk, $.90; in paper bags, $1.05; and in barrels, $1.35.

STARCH—Higher corn ceilings are talked about. Weather slows deliveries. Market still tight. Quotations continue unchanged. Pearl is currently quoted at $3.10 per 100 pounds. The powdered grade is currently quoted at $3.20 per 100 pounds. All prices f. o. b. Chicago.

SULPHATE OF ALUMINA—Market situation in sulphate of alumina is reported satisfactory at this date. Quotations continue unchanged. Prices on the commercial grades are quoted at from $1.15 to $1.25 per 100 pounds. The iron free is currently quoted at $2.35 per 100 pounds. All prices in car lots, in bags, f. o. b. works.

SULPHUR—Demand is reported steady for sulphur. Quotations on all grades continue unchanged. Annual contracts are currently quoted at $16 per long ton, f. o. b. mines. The current contract price at Gulf Ports remains unchanged at $17.50 per long ton.

TALC—Demand is reported moderate on some grades of domestic talc at this date. The domestic grades are currently quoted at from $16 to $21 per ton, at mines.

MARKET QUOTATIONS

All market quotations, excepting those otherwise designated as official OPA maximum prices, are based on the manufacturers' price level as of October 1-15, 1941; maximum wholesale prices are based on the merchants' maximum prices for stipulated quantities at a quoted price to all customers of a like class, as shown by the merchant's sales records of goods delivered during March, 1942. A merchant's price list in effect in March 1942, showing quotations of actual shipments, will establish the current maximum prices.

Paper

(Delivered New York)

News, per ton—			
Roll, contract	*$58.00	@	—
Sheets	64.00	"	—
* OPA Maximum Price.			
Kraft—per cwt.—Carload Quantities Zone A, f.o.b. Mill			
Superstandard Wrapping	*$5.25	@	—
No. 1 Wrapping	*5.00	"	—
Standard Wrapping	*4.75	"	—
Standard Bag	*4.375	"	—
* OPA Manufacturers' Prices.			
Tissues—Per Ream—Carlots			
White No. 1	1.12½	"	—
White No. 1 M. G.	1.10	"	—
White No. 1½	1.00	"	—
White No. 2	.90	"	—
Anti-Tarnish M.F.	1.20	"	—
Colored	—	"	—
Kraft	.95	"	—
Manila	.90	"	—
Toilet—1 M. Sheets—Per Case			
Unbleached	4.25	"	—
Bleached	5.70	"	—
Unbl. Toilet, 1 M.	4.16	"	—
Bleached Toilet	5.70	"	—
Paper Towels, Per Case—			
Unbleached, Jr.	2.60	"	—
Bleached, Jr.	3.20	"	—
Manila—per cwt.—C. l. f. a.			
No. 1 Jute	11.25	@	—
No. 1 Manila Wrapping, 35 lb.	6.00	"	6.25
No. 2 Manila Wrapping, 35 lb.	5.75	"	6.00
Boards, per ton—			
News	*48.00	@	—
Chip	*48.00	"	—
Sgl. Mla. Lt. Chip	*60.00	"	—
White Pat. Coated	*75.00	"	—
Kraft Liners 50 lb.	*63.00	"	—
Binders Boards	84.00	"	116.00

* OPA Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5.; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds	Ledgers
100% Rag Ext. No. 1	$39.10@$46.00	$40.25@$47.25
100% Rag	32.20 " 37.75	33.35 " 39.25
85% Rag	.... "	29.90 " 35.00
75% Rag	23.00 " 27.00	24.15 " 28.25
65% Rag	.... "	22.80 " 27.75
50% Rag	18.70 " 22.75	19.90 " 24.25
25% Rag	16.40 " 20.00	17.55 " 21.50

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items. Delivered in Zone 1:

	Bonds	Ledgers
No. 1	$10.55@$12.75	$11.70@$14.25
No. 2	9.65 " 11.75	10.80 " 13.25
No. 3	9.20 " 11.25	10.35 " 12.50
No. 4	8.90 " 10.75	10.05 " 12.25

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper. Delivered in Zone 1:

No. 1 Glossy Coated	$13.65@$15.30
No. 2 Glossy Coated	12.40 " 14.00
No. 3 Glossy Coated	11.60 " 13.25
No. 4 Glossy Coated	11.15 " 12.75
No. 1 Antique (watermarked)	10.25 " 11.75
No. 2 Offset	9.60 " 11.00
A Grade E. F.	9.35 " 10.75
A Grade S. & S. C.	9.60 " 11.00
B Grade E. F.	8.85 " 10.25
B Grade S. & S. C.	9.10 " 10.50
C Grade E. F.	8.55 " 9.75
C Grade S. & S. C.	8.80 " 10.00
D Grade E. F.	8.25 " 9.50
D Grade S. & S. C.	8.50 " 9.75

Ivory & India at $.50 cwt. extra.

Wood Pulp

OPA Maximum Prices and Canadian Manufacturers Prices, Less Freight, Not Exceeding OPA Allowances.

Bl. Softwood Sulphite	$76.00
Unbl. Softwood Sulphite	65.00@ 66.00
Bl. Hardwood Sulphite	73.50
Unbl. Hardwood Sulphite	63.50
Bl. Mitscherlich	81.00
Unbl. Mitscherlich	72.00 @ 82.00
N. Bleached Sulphate	86.00
S. Bleached Sulphate	79.00
N. Semi-Bleached Sulphate	82.00
S. Semi-Bleached Sulphate	75.00
N. Unbl. Sulphate	73.00
S. Unbl. Sulphate	63.50
Bl. Soda	66.00
Unbl. Soda	68.00
Groundwood	46.00

Transportation Allowances

Applying to Producers of Wet Wood Pulp.

	Below 50% Air Dry Weight
Northeast	$13.50
Lake Central	13.50
Southern	16.00
West Coast (in area)	10.50
West Coast (out area)	16.50

	50%-80% Air Dry Weight
Northeast	$11.50
Lake Central	11.50
Southern	14.00
West Coast (in area)	9.50
West Coast (out area)	15.50

Applying to Producers of Dry Wood Pulp.

	Above 80% Air Dry Weight
Northeast	$8.50
Lake Central	8.50
Southern	11.00
West Coast (in area)	7.50
West Coast (out area)	13.50

Should freight charges actually exceed these allowances, the difference may be added to the maximum prices.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1	6.50	@	7.25*
Silesias No. 1	—	"	5.75*
New Unbleached	6.75	"	7.50*
Blue Overall	—	"	5.50*
Fancy	—	"	3.50*
Washables	—	"	3.00*
Bleached Khaki Cuttings	—	"	4.25*
Unbleached Khaki Cuttings	—	"	3.50*

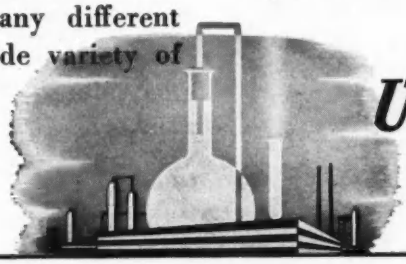
* OPA Maximum Prices.

UBATEX

How about ~~LATEX~~?

UBATEX is a completely synthesized substitute for unvulcanized latex . . . produced in many different formulations to meet a wide variety of specified operations.

If you have been using latex for impregnating or other paper manufacturing processes, UBATEX may provide the answer to your latex supply problem. Send today for a free sample. Or better still, write us complete details concerning what you wish to accomplish, so that our laboratory may collaborate with you in solving your latex replacement problems.



UNION BAY STATE Company

80 HARVARD ST., CAMBRIDGE, MASS.

Cleanliness Pays Dividends . . . In Paper Mills!

It pays to "keep a clean house" in your Mill. Here's Why:

1. Floors, stairs and catwalks cleaned regularly of slime and grease help to prevent bad falls by your employees.
2. Periodic cleaning of machinery helps to locate parts that need repairing or replacing.
3. A clean place to work, spotless washrooms and restrooms reduce employee turnover.
4. Properly cleaned felts save money by lasting longer on the job.
5. Slime-free systems mean less stock spoilage and fewer shutdowns.

These are the Magnus Cleaners you'll need to help keep your mill in clean condition:

MAGNUS 92-P cleans, whitens and hardens cement floors at less than 3c per 100 sq. ft.

MAGNUSOL takes the "cling" out of greasy dirt on machines.

MAGNUS 55-P cleans, deodorizes and disinfects all surfaces. It's fine for those "smelly" places.

MAGNUS FELT CLEANER completely penetrates felts, putting them in a soft and evenly absorbent condition.

MAGNUS SLIME REMOVER quickly penetrates and removes slime deposits at a considerable saving.

For additional information on any of these products, ask for your copy of the Paper Mill Cleaning Handbook and data sheets.

MAGNUS CHEMICAL COMPANY

24 South Avenue Garwood, N. J.

Service Representatives in All Principal Cities

Magnus PAPER MILL CLEANERS

Old Rags

White, No. 1—			
Repacked	*3.80	"	—
Miscellaneous	*3.20	"	—
White, No. 2—			
Repacked	*2.90	"	—
Miscellaneous	*2.65	"	—
Third and Blues—			
Repacked	*2.20	"	—
Miscellaneous	*1.80	"	—
Roofing Rags—			
No. 1	*1.55	"	—
No. 2	*1.45	"	—
No. 3 (bagging)	*1.35	"	—
No. 4	*1.35	"	—
No. 5A	*1.35	"	—
Old Manila Rope	5.75	"	—

OPA Maximum Prices.

Foreign Rags

All Prices nominal

New Rags

New Dark Cuttings	2.25	@	2.40
New Mixed Cuttings	2.00	"	2.20
New Light Silesias	5.50	"	5.75
Light Flannelettes	5.50	"	5.75
New White Cuttings	7.00	"	7.50
New Light Oxfords	4.00	"	4.50
New Light Prints	3.00	"	3.25

Old Rags

No. 1 White Linens	7.50	"	8.50
No. 2 White Linens	6.50	"	7.50
No. 3 White Linens	4.50	"	—
No. 4 White Linens	2.25	"	3.25
No. 1 White Cotton	4.25	"	4.75
No. 2 White Cotton	3.25	"	3.75
No. 3 White Cotton	2.50	"	3.00
No. 4 White Cotton	1.90	"	2.20
Extra Light Prints	2.00	"	2.40
Ord. Light Prints	1.75	"	2.15
Med. Light Prints	1.55	"	1.95
Dutch Blue Cottons	2.25	"	2.50
French Blue Linens	3.00	"	—
Checks and Blues	2.00	"	—
Linsey Garments	1.90	"	2.00
Dark Cottons	1.50	"	1.60
Old Shopperies	1.30	"	1.45
New Shopperies	1.45	"	1.50
French Blues	2.25	"	2.50

BAGGING

(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	4.25	@	4.35
Wool Tares, light	4.25	"	4.50
Wool Tares heavy	4.50	"	5.00
Bright Bagging	4.50	"	4.85
Manila Rope—			
Foreign	—	"	—
Domestic	*5.75	"	—
Jute Threads	5.50	"	—
No. 1 Sisal Strings	*4.00	"	—
Mixed Strings	2.00	"	—

* OPA Maximum Price.

Old Waste Papers

(F. o. b. New York)

OPA Maximum Prices

No. 1 Hard White Envelope Cuts, one cut	3.37½	@	—
No. 1 Hard White Envelope Cuts	3.12½	"	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
No. 1 Hard White Shavings, ruled	2.50	"	—
Soft White Shavings, one cut	2.87½	"	—
No. 1 Soft White Shavings	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Mixed Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
Mixed Groundwood Colored Shavings	.90	"	—
Overissue Magazines	1.67½	"	—
No. 1 Heavy Books & Magazines	1.67½	"	—
Mixed Books	.85	"	—
No. 1 White Ledger	2.17½	"	—
No. 2 Mixed Ledger, colored	1.87½	"	—
New Manila Envelope Cuttings, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
Extra Manilas	1.85	"	—
Mixed Kraft, Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
Triple Sorted, No. 1 Brown Soft Kraft	2.50	"	—
New 100% Kraft Corrugated Cuttings	2.25	"	—
No. 1 Assorted Old Kraft	1.75	"	—
New Jute Corrugated Cuttings	.90	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.15	"	—
Box Board Cuttings	.72½	"	—
White Blank News	1.65	"	—
Overissue News	.85	"	—
No. 1 News	.75	"	—
No. 1 Mixed Paper	.70	"	—
Old Corrugated Containers	.82½	"	—
Mill Wrappers	.85	"	—

Twines

All Prices Nominal

(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—			
India	.21	@	—
White Hemp	.21	"	—
Fine Polished—			
Fine India	.26	"	—
Unpolished—			
Box	.17¼	"	—
Paper Makers	.17	"	—
Tube Rope	.19	"	—
Wall Paper	.20½	"	—
Wrapping	.23	"	—
Soft Fiber Rope	.19	"	—
Cotton	.25	"	—

(Hard Fiber)

Medium Java	.18	"	—
Mex. Sisal	.16	"	—
Manila		"	—

PHILADELPHIA

Domestic Rags (New)

(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White No. 1	.07¼	@	.07½
New White No. 2	.04½	"	.05
Light Silesias	.04¼	"	.04¾
Silesias, No. 1	.04	"	.04¼
Black Silesias, soft	.03¾	"	.04
New Unbleached	.07¼	"	.07½
Washable Prints	.03¾	"	.03½
Washable No. 1	.02	"	.02¼
Blue Overall	.04½	"	.05½
Cottons—According to grades—			
Washable shredding	—	"	.01¾
Fancy Percales	.03¼	"	.03½
New Black Soft	.02¾	"	.03
New Dark Seconds	1.75	"	2.00
Khaki Cuttings—			
No. 1 O. D.	.03	"	.03¼
No. 2 Mixed	.02¼	"	.02½
Corduroy	.01¾	"	.02¼
New Canvas	.04¾	"	.05¼
New Black Mixed	—	"	.02½

Domestic Rags (Old)

White No. 1—Repacked	3.80	"	—
White No. 2—Repacked	2.90	"	—
Miscellaneous No. 1	3.20	"	—
Miscellaneous No. 2	2.65	"	—
Thirds and Blues—			
Miscellaneous	1.80	"	—
Repacked	2.20	"	—
Black Stockings—			
(Export)	Nominal		
Roofing Stock—			
Foreign No. 1	Nominal		
Domestic No. 1	1.55	"	—
Domestic No. 2	1.45	"	—
Roofing Bagging	1.35	"	—
Old Manila Rope	5.75	"	—

Bagging

(F. o. b. Phila.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	3.00	"	3.50
Sisal Rope	3.75	"	—
Mixed	1.00	"	1.50
Scrap—			
No. 1	3.25	"	3.50
No. 2	1.75	"	1.80
Wool Tares	4.00	"	4.25
No. 1 New Light Burlap	3.00	"	4.00
New Burlap Cuttings	3.75	"	4.00

Old Papers

(F. o. b. Phila)

OPA Maximum Prices

No. 1 Hard White Envelope Cuts, one cut	3.37½	"	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
Soft White Shavings, one cut	2.50	"	—
White Blank News	1.65	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Hard White Shavings, ruled	2.50	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
Hard White Envelope Cuts, one cut	3.37½	"	—
Triple Sorted No. 1 Brown Soft Kraft	2.50	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
No. 1 Heavy Books & Magazines	1.67½	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
White Blank News	1.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper	.70	"	—
Overissue News	.85	"	—
Box Board Cuttings	.72½	"	—
New Corrugated Cuttings, Kraft	2.25	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.15	"	—
Jute Corrugated Cuttings	1.07½	"	—

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	(nominal)		
Domestic	2.50	@	2.75
Sisal Rope No. 1	*4.75	"	—
Sisal Rope No. 2	*4.25	"	—
Mixed Rope	1.35	"	1.50
Transmission Rope—			
Foreign	(nominal)		
Domestic	2.75	"	3.00
Manila Rope—			
Foreign	(nominal)		
Domestic	5.75	"	—
Soft Jute Rope	5.25	"	—
Jute Carpet Threads	3.00	"	3.50
Bleachery Burlap	8.50	"	9.00
Scrap Burlap—			
Foreign	(nominal)		
Domestic	3.25	"	3.50
Wool Tares—			
Foreign	(nominal)		

CHICAGO

Waste Paper

(F. o. b. Chicago)

OPA Maximum Prices.

Shavings—			
No. 1 Hard White Envelope Cuts, one cut	1.37½	"	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
No. 1 Soft White Shavings	2.50	"	—
No. 1 White Ledger	2.17½	"	—
No. 1 Heavy Books & Magazines	1.67½	"	—
White Blank News	1.65	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
No. 1 Assorted Old Kraft	1.75	"	—
Overissue News	.85	"	—
No. 1 News	.75	"	—
No. 1 Mixed Paper	.70	"	—
No. 1 Roofing Rags	1.55	"	—
No. 1 Roofing Bags	1.45	"	—
Misc.	2.13	"	—
No. 1 White Ledger	2.17½	"	—
No. 2 Ledger, colored	1.87½	"	—
No. 1 Heavy Books & Magazines	1.67½	"	—
Overissue Magazines	1.67½	"	—
New Manila Envelope Cuttings	2.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper	.70	"	—
Box Board Cuttings	.72½	"	—
Kraft Corrugated Cuttings	2.25	"	—
Old Corrugated Containers	1.15	"	—
Overissue News	.85	"	—
No. 1 News	1.00	"	—

BOSTON

Old Papers

(F. o. b. Boston)

OPA Maximum Prices

No. 1 Hard White Shavings, unruled	2.87½	@	—
No. 1 Hard White Shavings, ruled	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
Hard White Envelope Cuts, one cut	3.37½	"	—
Triple Sorted No. 1 Brown Soft Kraft	2.50	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
No. 1 Heavy Books & Magazines	1.67½	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
White Blank News	1.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper	.70	"	—
Overissue News	.85	"	—
Box Board Cuttings	.72½	"	—
New Corrugated Cuttings, Kraft	2.25	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.15	"	—
Jute Corrugated Cuttings	1.07½	"	—

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	(nominal)		
Domestic	2.50	@	2.75
Sisal Rope No. 1	*4.75	"	—
Sisal Rope No. 2	*4.25	"	—
Mixed Rope	1.35	"	1.50
Transmission Rope—			
Foreign	(nominal)		
Domestic	2.75	"	3.00
Manila Rope—			
Foreign	(nominal)		
Domestic	5.75	"	—
Soft Jute Rope	5.25	"	—
Jute Carpet Threads	3.00	"	3.50
Bleachery Burlap	8.50	"	9.00
Scrap Burlap—			
Foreign	(nominal)		
Domestic	3.25	"	3.50
Wool Tares—			
Foreign	(nominal)		
Domestic	4.25	"	—
Aust. Wool Pouches	3.75	"	4.00
New Burlap Cuttings	4.75	"	5.00
Heavy Baling Bagging	4.00	"	4.25
Paper Mill Bagging	2.50	"	3.00
No. 2 Bagging	1.35	"	—*

* OPA Maximum Price.

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.04½	@	.04¾
Fancy Percales	.04¼	"	.05
New White No 1.	.06¾	"	.07
New Light Flannelettes	.05½	"	.06
Canton Flannels, Bleached	.06	"	.06¾
Underwear Cutters, Bleached	.06¾	"	.06¾
Underwear Cutters, Unbleached	.05¾	"	.06
Silesias No. 1	.06	"	.06¾
New Black Silesias	.03	"	.03½
Red Cotton Cuttings	.03½	"	.04
Soft Unbleached	.06½	"	.06¾
Blue Cheviots	.05½	"	.06
Fancy	.02¾	"	—
Washable	.02¾	"	—
Khaki Cuttings	.02¾	"	.03
O. D. Khaki	.03½	"	.03¾
Corduroy	.03¼	"	.03½
New Canvas	.06¼	"	.06¾
B. V. D. Cuttings	.06¼	"	.06¾

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—			
Repacked	3.80	@	—*
Miscellaneous	3.20	"	—*
White No. 2—			
Miscellaneous	2.65	"	—*
Twos and Blues, Repacked	2.20	"	—*
Old Blue Overalls	2.25	"	2.50
Thirds and Blues, Repacked	2.20	"	—*
Miscellaneous	1.80	"	—*
Black Stockings	3.50	"	4.00
Roofing Stock—			
No. 1	1.55	"	—*
No. 2	1.45	"	—*
No. 3	1.35	"	—*
No. 4	1.35	"	—*
No. 5, Quality A	1.35	"	—*
Quality B	1.20	"	—*
Quality C	.95	"	—*
Old Manila Rope	5.75	"	—

* OPA Maximum Prices.

Foreign Rags

(F. o. b Boston)

Canvas	(nominal)
Dark Cottons	(nominal)
Dutch Blues	(nominal)
New Checks and Blues	(nominal)
Old Fustians	(nominal)
Old Linsey Garments	(nominal)
New Silesias	(nominal)